

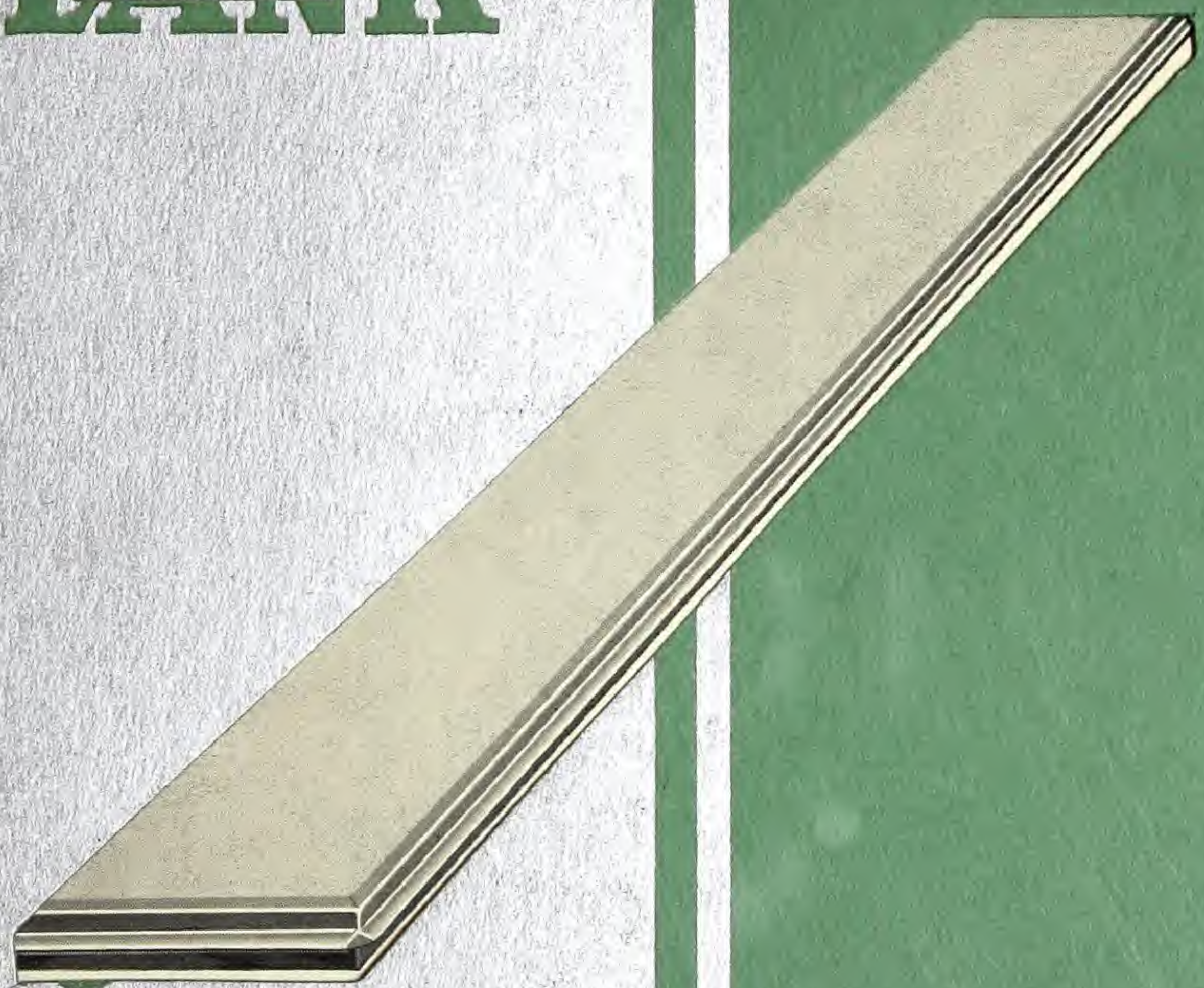
869-9

A.I.A. File No. 10

Gypsteel Gypsum Plank.

JAN 2 1935

# GYPSTEEL PLANK



Gypsteel Gypsum Plank

A.I.A. File No. 10

THE WALK BROTHERS  
PHILADELPHIA





UNITED STATES OF  
AMERICA



---

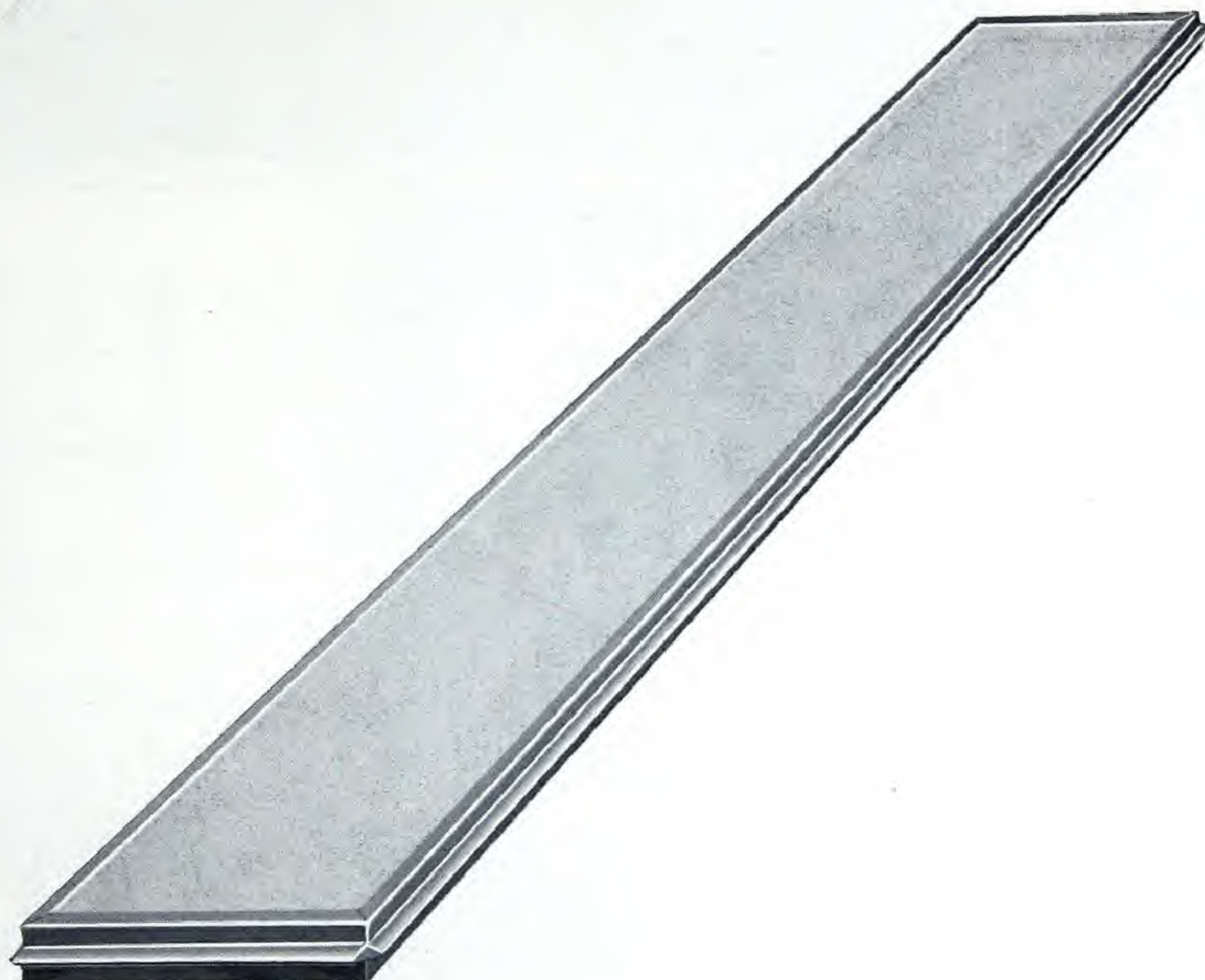
---

# **GYPSTEEL PLANK**

gypsum

TRADE MARK

U. S. PATENTS No. 1,635,796 AND 1,854,396. CANADIAN PATENT  
No. 328,519. OTHER U. S. AND FOREIGN PATENTS PENDING.



Gypsteel Gypsum Plank, in all forms, is an exclusive development of, and  
is manufactured and sold only by or under license of the

**STRUCTURAL GYPSUM CORPORATION**

A unit of American Cyanamid Company

30 ROCKEFELLER PLAZA - NEW YORK

Offices in Principal Eastern Cities

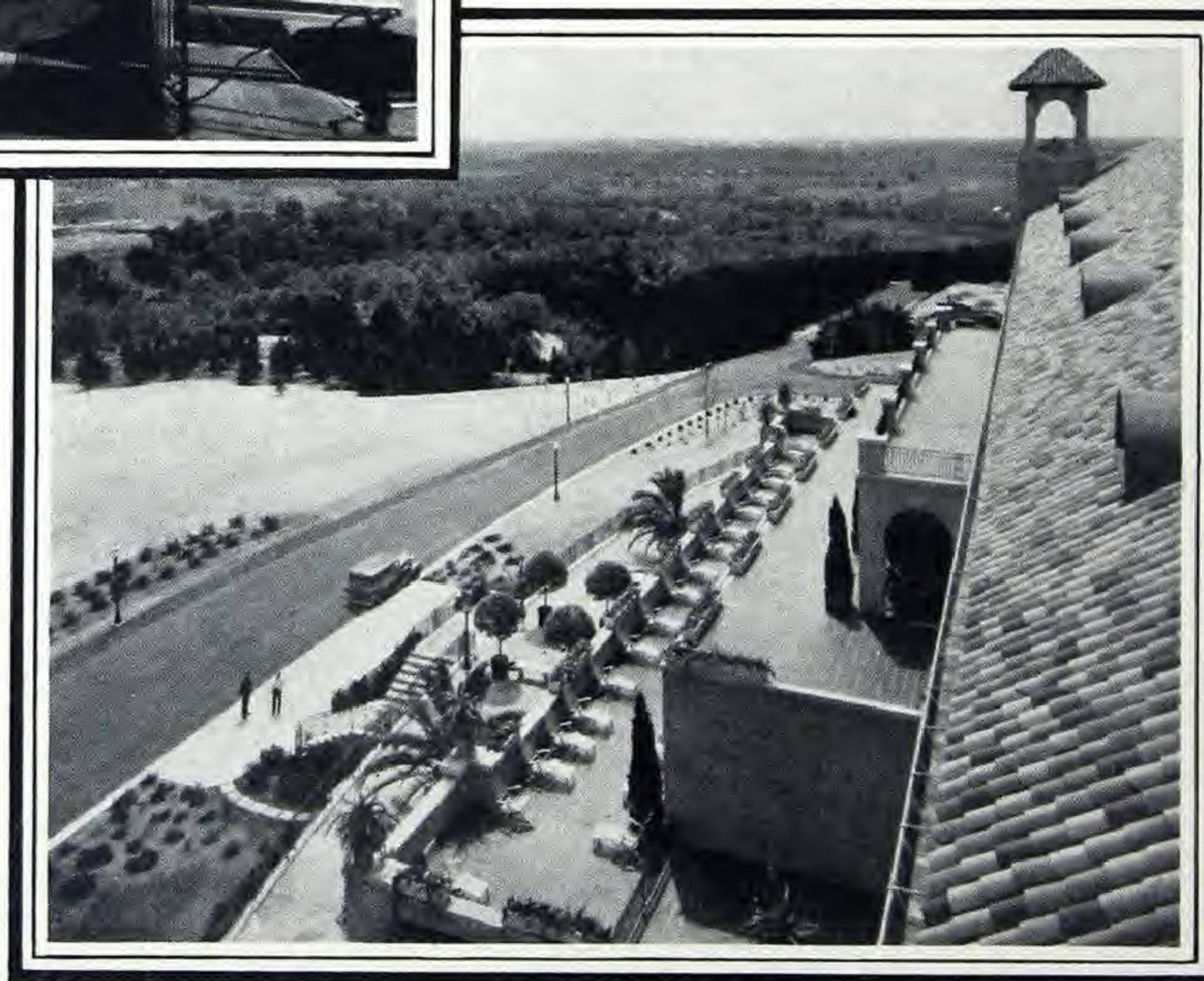
BULLETIN 34C  
SECOND EDITION

NOW STRUCTURAL GYPSUM DIVISION  
AMERICAN CYANAMID & CHEMICAL CORPORATION





Center—The lobby.



Right—View from one of the many terraces.

Hotel Hershey, Hershey, Pennsylvania. Hershey Lumber Products, Architects & Builders.

In this luxurious resort hotel, 135,000 square feet of Gypsteel Gypsum Plank were used for floors. Gypsteel Precast Ceilings and Beam Covering fireproof all supporting steel. The floors of all terraces are built of Gypsteel Precast Composite Arches.

Photos by Wurts Bros.



# GYPSTEEL<sup>\*</sup> PLANK



CONCEIVED and developed originally to meet the demand for an economical roof deck, simple in application, low in upkeep cost, and yet retaining the well known fire resistive and insulative properties of



GYPSTEEL Gypsum Plank is handled, piled and used like ordinary lumber.

gypsum, Gypsteel Gypsum Plank has won widespread recognition not only in the field originally contemplated, but for many other practical uses in building as well.

Its acceptance by the building departments of the principal cities and its use by leading architects, builders, and engineers for roofs, as well as for floors, partitions, furring, etc., date from its initial offering.

With such widespread interest and encouraging response, it is but natural that refinements in the original types and improved forms for new uses should be developed. In announcing improvements in Gypsteel Plank, as well as important additions to the line, the Structural Gypsum Corporation gladly acknowledges its debt to many architects and engineers in private practice for their helpful ideas, suggestions, and criticisms.

Gypsteel Gypsum Plank may be nailed, sawed, cut, or bored with practically the same ease as wood plank. It offers the additional valuable characteristics of incombustibility, durability, attractive appearance, low maintenance cost, and uniformity, while retaining the simplicity and economy, in handling and erecting, found only in ordinary wood construction. It brings to the architect, builder, and owner new opportunities for sound economy in first class buildings, as well as a new standard of quality to those whose budgets are more limited.

Gypsteel Gypsum Plank is designed for use in all classes of wood or steel-frame buildings. It is recommended for:

**FLOORS**, on wood or steel joists or beams spaced not more than 5 feet on centers, for light load buildings, as apartments, hotels, schools, dwellings, etc.

**ROOFS**, on wood or steel supports spaced not more than 7 feet on centers, for industrial buildings, garages, schools, theatres, frame or other type of dwellings, etc.

**SHEATHING**, for frame dwellings, garages, service stations, warehouses, airplane hangars, temporary structures, etc.

**FURRING**, in place of lath, and/or insulating boards, for application on the inside direct to the building frame, combining fire protection and insulation.

**PARTITIONS**, (non-bearing) in fireproof or non-fireproof buildings of all types and occupancies.

**CEILINGS**, in fireproof buildings of all classes to protect supporting floor beams or steel joists; and in garages, theatres, airplane hangars, etc., to fireproof trusses and purlins, minimize heat loss, and provide flat, unbroken areas.

## GYPSTEEL GYPSUM PLANK

Weights Only  
11 Pounds  
Per Square Foot



# What GYPSTEEL GYPSUM PLANK is and How it is Made



**Gypsteel Gypsum Plank** varies in the details of the several types, depending upon their uses, but each retains the same fundamental principle of design; namely, similarity to wood lumber in form, use, convenience, and adaptability, with the certain strength that is assured only by steel reinforcing. Each is a solid slab of factory-cast, extra dense gypsum. All Plank is 2" thick, and 15" wide (except Ceiling Plank, which is 12" wide).

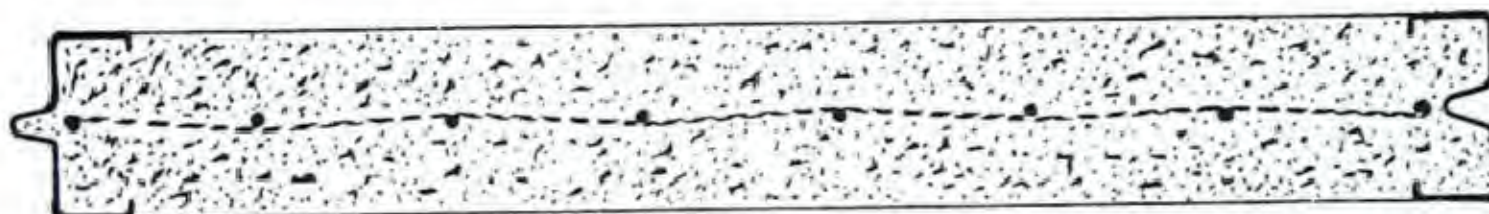
One of two simple, yet basic, principles underlies each type. These are:

1. Where Plank acts as a load carrying deck, as in floors or roofs, it is bound with galvanized, copper-bearing steel, *tongued and grooved just like wood lumber*.

2. Where load capacity is secondary in importance to the requirement of integral bond between the separate units (as in partitions and ceilings), in addition to individually reinforcing them, they are positively *locked together at the joints by steel dowels*.

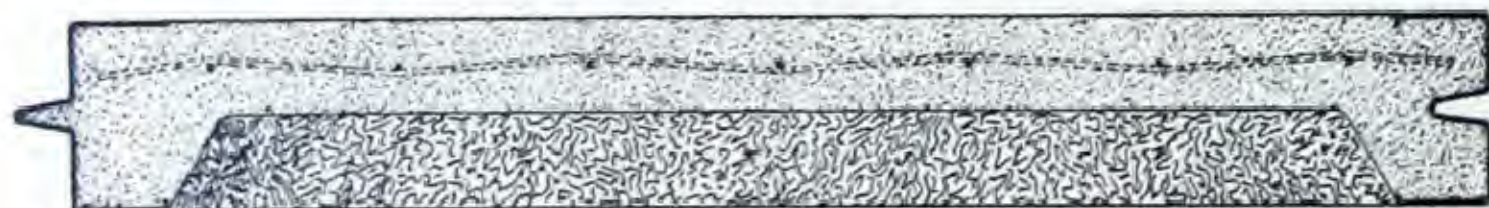
Gypsteel Plank is offered in five standard forms as follows:

**Senior Plank\***—10' long—for roofs on spans up to 7' and for floors on spans up to 5'. Tongued and grooved steel binding is on both sides as well as ends. The Gypsum core is additionally reinforced against impact with galvanized welded wire mesh.



Cross section through Senior and Junior Plank.

**Junior Plank\*** is designed for roofs on spans up to 4' and for floors on spans up to 3'. It is 6' long, has the same type of binding on the sides as the Senior Plank, but of a lighter gauge, and has gypsum ship-lapped ends. Like the Senior Plank, it is also reinforced with mesh.



Cross section through Acoustical Plank.

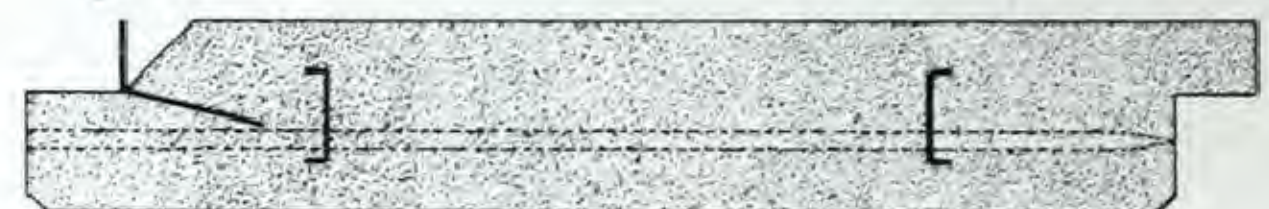
**Acoustical Plank\*** combines in one unit a structural roof deck with an acoustical ceiling of high quality. It is a modification of Senior Plank, having the identical steel binding and mesh reinforcing. It is 10'-0" long, and is suitable for roofs on spans up to 7'-0".

The underside of this Plank is left hollowed out for a depth of 1", and a sound absorbing medium is moulded into this space, at the factory.



Cross section through Partition Plank.

**Partition Plank\*** is recommended for partitions, furring and sheathing. The gypsum is tongued and grooved on the sides, reinforced with steel channels, and provided with steel dowels by means of which adjacent units are bonded together. It is made to order in any length up to 9'-0", to reach from floor to ceiling.



Cross section through Ceiling Plank.

**Ceiling Plank\*** is 12" wide, and 6'-0" long. It is hung by means of a continuous steel band, direct from beams, purlins, or joists located on any center up to 6'-0". Units are reinforced with steel channels and provided with steel dowels. Sides and ends are gypsum, ship-lapped.

In the three types of Plank for floors and roofs, the steel edges mesh together to form an I-beam, the strongest shape, of symmetrical cross-section, that can be designed. This "beam," uniformly supported laterally by the gypsum core, accounts for the unusual strength of Gypsteel Plank, as well as its adaptability to various job conditions. Note especially that the 'tongue' and 'groove' are tapered so that they mesh easily and yet firmly to form a solid floor or roof deck or wall. The design of



Section showing distinctive wedge-shaped tongue and groove that meshes easily, yet tightly, to form a continuous steel I-beam.

\* The term Plank, as applied to cementitious building products, is a trade mark of the Structural Gypsum Corporation.

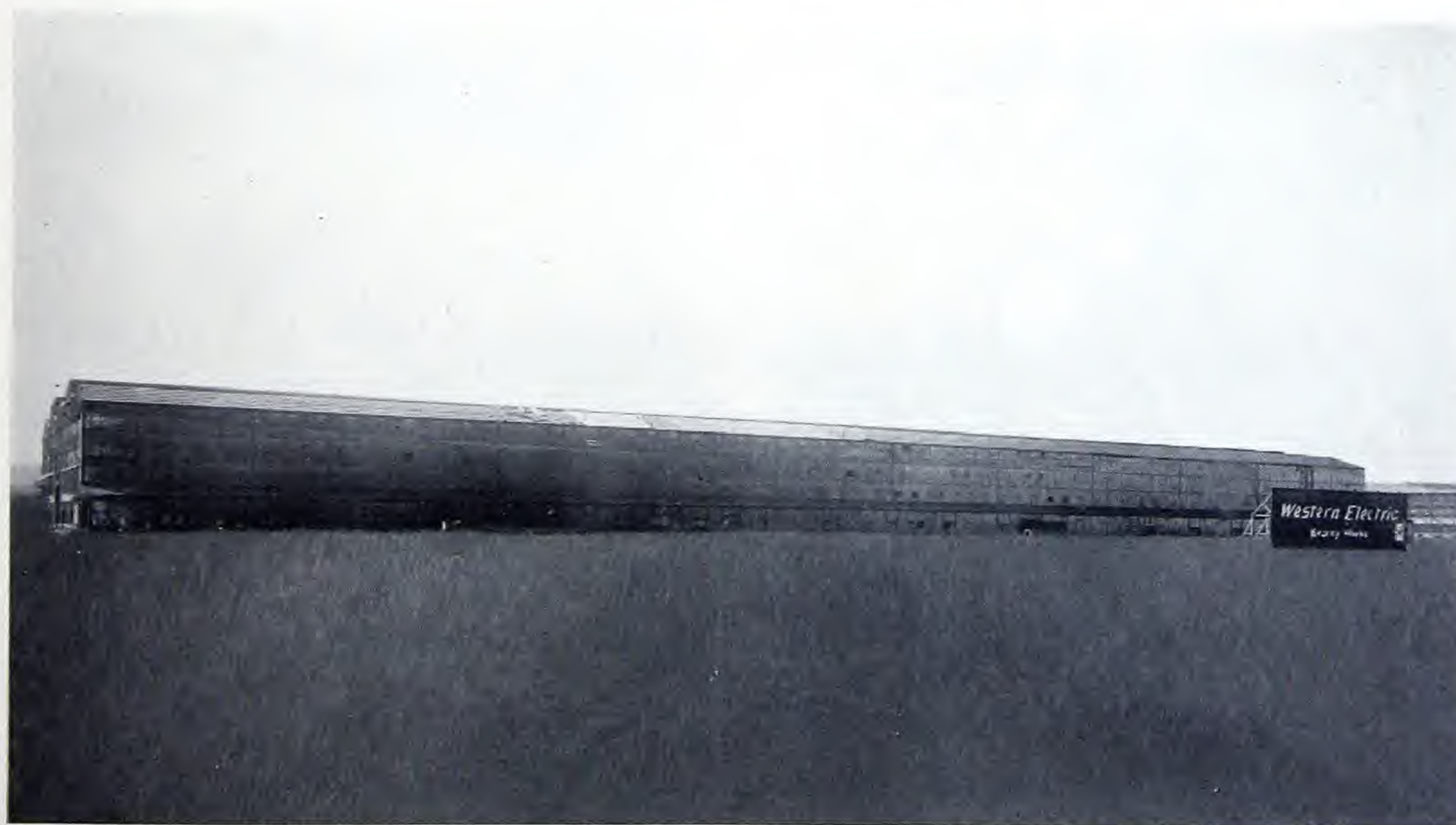
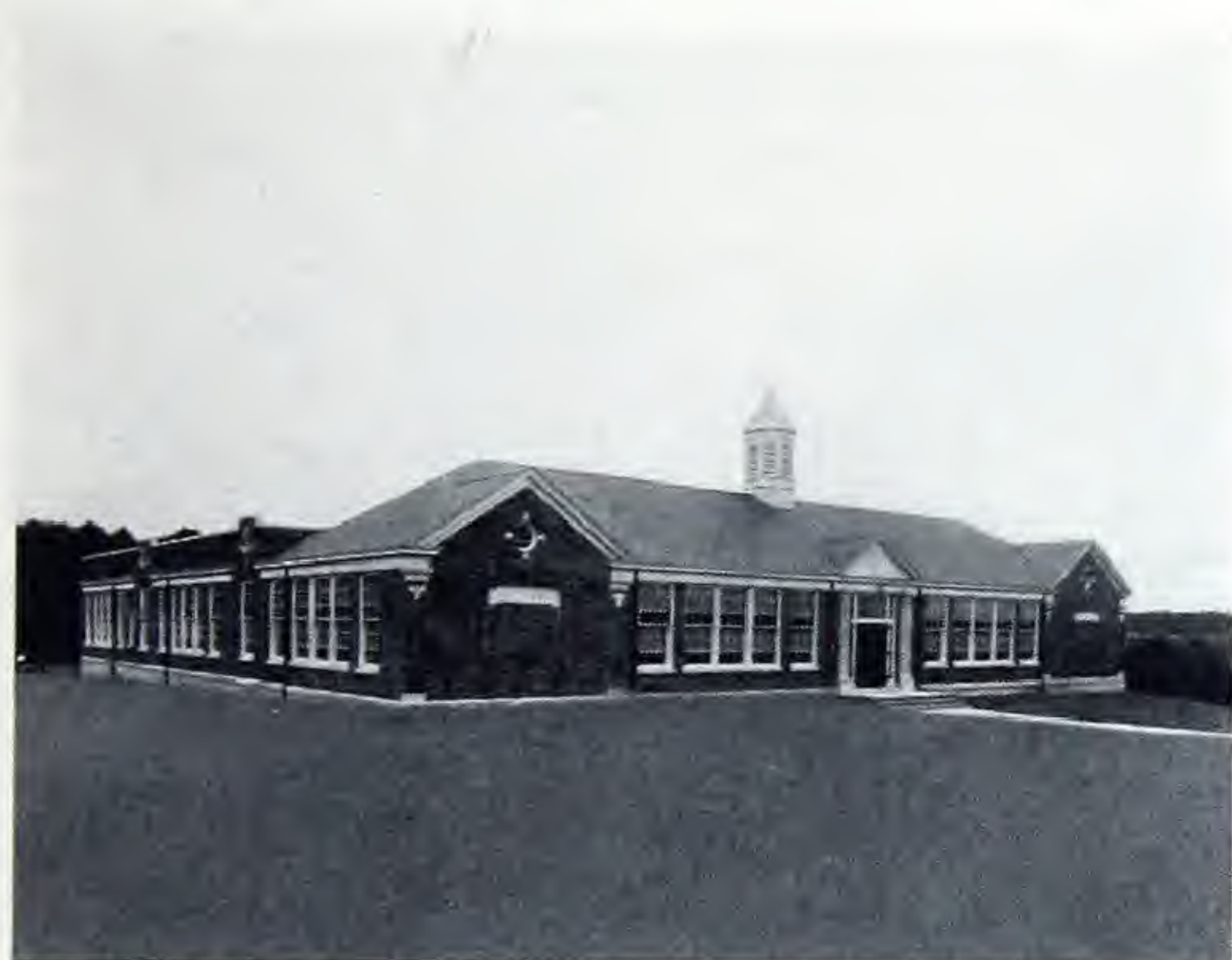


this binding, which is an exclusive feature of Gypsteel, is such that a load applied to an individual Plank will be distributed over the adjacent Plank through the value in "shear" of the steel tongues. In the cross-section through the roof and floor Plank, shown on the opposite page, as well as in the larger detail, you will see that the binding is turned down into the gypsum, stiffening the flanges and protecting the edges of the steel against corrosion. Note, also, the smooth surfaces on both top and bottom presented by Gypsteel Plank. There are no corrugations in the steel that may cut a waterproof roof covering.

Both Partition and Ceiling Plank are reinforced with



steel channels to strengthen them for shipping and handling, and to provide the stiffness necessary in a wall or ceiling. In addition, steel dowels, cast in place at the factory, run across their full width. As each Plank is erected, these are driven through and into the next abutting one, securely bonding the two together to act as a monolithic unit. A stiff steel band, running the full length of the Ceiling Plank, and punched on close centers, makes its support possible at any point.



Typical installations indicative of the wide adaptability of Gypsteel Gypsum Plank to small or large projects.  
 Upper Right: Store and Apartment, Dunmore, Pa., Vincent Riggi, Architect, 1,050 Sq. Ft. Gypsteel Gypsum Plank.  
 Center Left: Warren Township School, Mt. Bethel, New Jersey, Fisher & Brown, Architects, 10,000 Sq. Ft. Gypsteel Plank.  
 Bottom: Western Electric Company, Kearny, N. J., 145,000 Sq. Ft. Gypsteel Plank.



# How GYPSTEEL GYPSUM PLANK is used



**For Floors.** Senior or Junior Plank is laid directly over either wood or steel floor joists of any type and of either uniform or variable spacing. It is suitable for spans between joists up to 5'. *The Plank is erected with the end joints coming at random and without regard to joist spacings.* It is simply necessary to see that a reasonable distance is kept between the end joints in any adjacent row. This important feature reduces cutting to a minimum and eliminates practically all waste, for a small piece left over from the last Plank in any line may be used to start the next one. The tongued and grooved joints assures every Plank being supported by a continuous steel I-beam on the sides, and, meshing with abutting Plank, forms an integral unit of the whole area, practically monolithic in effect.

The steel I-beam being symmetrical, Gypsteel Plank

may be erected with either side up. There is, however, a difference in the finish on the two surfaces, which may be designated as, trowelled side" and "mat side" (the smoother). If the ceiling of a floor is to be exposed, it is recommended that the Plank be erected with the mat side down. If the ceiling is covered or if it is proposed to apply a thin type flooring, such as linoleum, mastic, etc., we recommend the mat side up.

A generous supply of steel clips is furnished without additional charge with all Plank for floors or roofs. These are used to fasten the Plank to steel joists or beams. Of simple design,

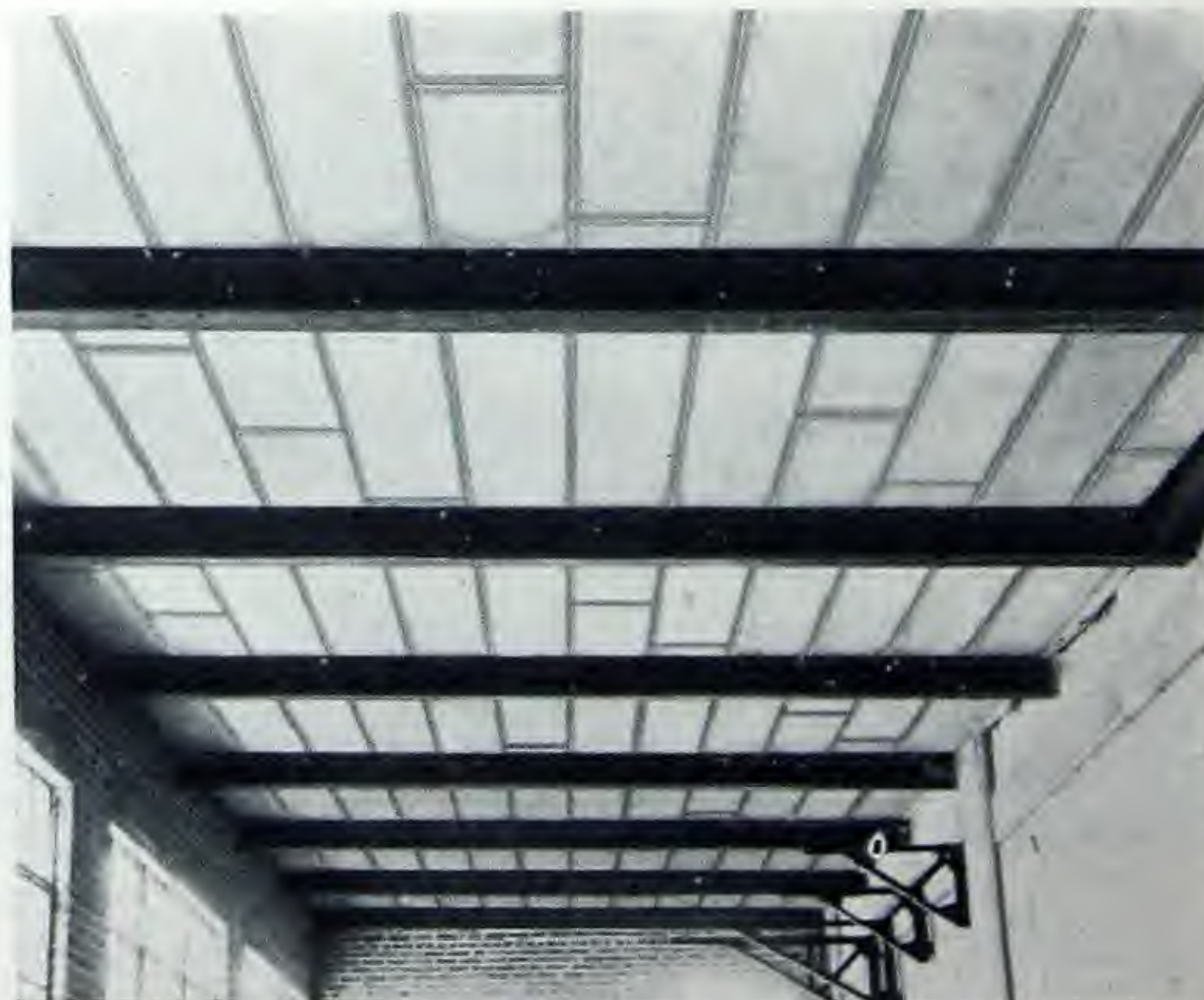
they are easily attached by nails (we recommend 4-d galvanized slater's nails) driven directly through the steel binding of the Plank on the female side, and will firmly hold the Plank in place, as well as stiffen the floor supports laterally.



Steel clips of simple design firmly secure PLANK to any type of steel support.



Erection of GYPSTEEL Plank involves the simplest conceivable operations.



Note how joints are broken at random.





A Plank floor or roof is ready for the work of succeeding trades as soon as it is laid. No joints to grout. No delays for the slab to "set." No forms to remove.

Plank is readily cut with an ordinary hacksaw. Or, after cutting the binding, Plank may be broken off if both sides are scored with a saw or a broad blade chisel. On larger operations, where more cutting is required, Plank may be economically cut by using a tile cutting saw of either the pistol grip or table type. The names of several manufacturers who specialize in these will be furnished upon request.

Practically any type of standard finish flooring may be applied direct to the Plank. Most reputable manufacturers of flooring, such as Zenitherm of Structural Gypsum Corporation; Associated Tile Manufacturers; Cellized Oak Flooring, Inc.; Storm Flooring, Inc.; Congoleum-Nairn, Inc.; Armstrong Cork Co.; Hachmeister-Lind Co., etc., have prepared detailed specifications for the application of their products over Gypsteel Plank and we refer you to their catalogs for complete information. Ordinary double floors are laid by simply nailing the rough flooring direct to the Gypsteel Plank and then laying the finished flooring in the usual manner. Cut nails are preferred and we recommend that they be driven in diagonally in opposite directions and through the metal as frequently as convenient. For best results, it is desirable to allow about 1" clearance between the rows of rough flooring as a guard against warping and buckling. As an added precaution, a layer of waterproof paper is sometimes first laid over the Plank. Ordinary sleepers may also be nailed direct to the Plank, with fill in between, if desired.

For terrazzo, cement, or similar poured finishes, the Plank should be first water-proofed with a coat of tar or asphalt or the surface primed with a gypsum sealer. The finish should not be less than 1½" thick (for best results a minimum of 2" is recommended) and should be provided with adequate expansion joints and mesh reinforcing as recommended by the Portland Cement Association and similar trade bodies. Where a fill is used between the Plank and the finish, it should be not less than 1½", followed by the same specification for the finish itself as would be used over concrete.

**For Roofs.** Senior or Junior Plank is used for roofs in a manner similar to its application for floors, and with the same structural advantages. *End joints are staggered. Plank are erected without regard to purlin spacings.* On the spans recommended of 7' for Senior size, and 4' for Junior, Gypsteel Plank shows practically no deflection when loaded to twice its designed capacity of 40 pounds per square foot, and has an ultimate capacity of many times that amount. Even when a test panel of Gypsteel Plank is loaded until the steel binding is permanently deformed, the Plank does not fail or collapse in the ordinary sense, but goes into suspension. The deck will still retain a large proportion of its original strength, for the reason that the individual units are continuous over two or more supports and are securely meshed to adjacent intact units.

At the eaves of the building, the Plank may overhang up to 18" beyond supports. At the sides, it is not desirable to extend more than 6" beyond the supports. All openings, except for small pipes, vents or downspouts, should be framed out.

Plank may be erected on any type of roof; flat, pitched, saw tooth, hipped, mansard, etc. It may be placed either with or across the slope. Valleys, gussets and coves are readily formed from Gypsteel composition, poured and screeded to the desired level. As in the case of finished flooring, practically any type of standard roofing is easily applied over Gypsteel Gypsum Plank. In applying built-up roofings the general practice is to follow the usual specifications for ap-



GYPSTEEL Plank is cut, sawed, or bored as readily as wood lumber.





Cut up roofs, steep pitches—bring out the advantages of Gypsteel Plank.

plication over wood decks, nailing the first layer of paper or felt, and spot mopping, if desired, but not mopping the entire area. Shingle, slate, and other roofings of this type may be nailed direct to the Plank, which should be dry before application. Square cut nails, preferably of hard copper, and penetrating  $1\frac{1}{2}$ " are recommended. For heavy roofings and steep pitches, it is recommended that the roofing be nailed to wood grounds attached direct to the Plank. Curbs, heads, and end walls of monitors are quickly constructed from the same material, or may be built of Gypsteel Partition Tile 2" thick, solid, or 3" or 4" thick, solid or hollow.

**For Roofs of Buildings Requiring Sound Deadening.** Gypsteel Acoustical Plank is a modification of Senior Plank. It is 2" thick, 15" wide, and 10'-0" long, and uses the identical steel binding, a strong, rigid frame, with reinforced corners, accurately made. The gypsum core is reinforced with mesh. The underside of this Plank is left hollowed out for a depth of 1", and this space is filled, at the factory, with a sound-absorbing medium impregnated and bound together with a cement, which renders it free from possible rot or the attack of vermin. Because of this treatment it will not support combustion.

Gypsteel Acoustical Plank is erected in exactly the same manner as Senior Plank, has the same wide adaptability, and is suitable for all types of roof construction on spans up to 7'-0".



On hundreds of jobs PLANK has fully demonstrated its simplicity, adaptability, and speed of erection.

*General Recommendations.* Acoustical Plank is a finished product. Like any acoustical material, the ceiling surface is easily abraded, and a satisfactory finished appearance will depend upon reasonable care being exercised in unloading, storing, and erecting. These precautions are less exacting than with most competitive materials, for the acoustical filler is protected on the top by the reinforced gypsum deck, and on the sides and ends by the steel binding. As an additional precaution, the exposed gypsum surface is given a water-resistant treatment at the factory. This is not intended as a substitute for the customary roof covering, nor as protection against unnecessary exposure to the elements, but is designed as insurance against accidental wetting. Acoustical Plank should not overhang beyond the walls, or otherwise be exposed permanently to the elements.

In trucking and storing, always pile on edge with the female side down, taking care to avoid direct contact between the gypsum surface of one Plank, and the acoustical side of another. Material should be stored



Slate and similar roofings are nailed direct to PLANK. No special treatment is required.



under cover where it will not collect dirt. All areas installed should be protected from the elements by tarpaulins, or the first layer of waterproofing.

Built-up roofings should be applied without nails; the first layer of paper being spot mopped in place, following the specifications customary with precast concrete roofs. Slate, tile, and copper roofings which are to be nailed should be attached to wood battens, or nailers, running across the Plank, to which they are nailed in turn *through the steel binding*.

**For Partitions.** Gypsteel Partition Plank is available in standard units, 2" in thickness, by 15" wide, manufactured to order in lengths up to 9'-0" to reach from floor to ceiling. It is designed primarily for the construction of non-bearing partitions, without studding, in apartments, residences, and similar buildings, within the limitations of the 9'-0" ceiling height. It offers at moderate cost the important qualities of fire protection, substantial resistance to the passage of sound between adjoining rooms or apartments, and a choice of finishing treatments ranging from those suitable for buildings in the lowest price class to those comparable in every way with the requirements for the very finest structure. It is especially adaptable to residences of the unit type, and to large scale housing operations which lend themselves to the use of a multiplicity of standard size units.

Partition Plank is an all gypsum, reinforced slab. It has square ends and gypsum tongued and grooved sides for its entire length. It is erected vertically from floor to ceiling where it is securely wedged in place with wedges. After erection the horizontal joints at the floor and the ceiling are filled solidly with gypsum grout which, when dry, assures the stability of the partition, independent of any shrinkage in the wedges. When completed, the wedges are cut off flush with the Plank surface.

As each succeeding unit is erected (and before the joints are grouted), steel dowels, cast in each Plank, and running across its width, are driven through the Plank and into the next abutting unit for about 2". A simple dowel punch, designed for this purpose, and furnished with the Plank, simplifies this operation, and assures the proper degree of penetration. Thus *all units are permanently locked together*, and all vertical joints are *thoroughly reinforced*. This distinctive method of inter-locking guarantees a wall of uniform strength, thoroughly stable, unusually free from vibration for a partition of this thickness, and minimizes the possibility of cracks in the finished surface.

All Partition Plank is reinforced longitudinally with cold rolled steel channels cast integral, providing a strong unit, practical to ship and handle on the job.

An important feature is the simplicity and ease with which steel door bucks and frames are installed in Plank partitions. As is well known, it is customary with other forms of construction to set the bucks in advance of the masons. They must be temporarily, but securely fixed in place, plumbed, and braced. Frequently they must be replumbed, and reset before the

partition is finally built around them. When Plank is used, steel bucks are available that securely fit over and lock on the partition, so that they are *erected simultaneously with the Plank*, and with the same ease, as the openings are reached.

Partition Plank is sawed with an ordinary block or rip saw. When cutting longitudinally the dowels are driven far enough out to miss the cutting line. The reinforcing does not extend for the full length of the Plank, so that it is a simple matter to cut the ends of the units to meet irregularities, or to fit over minor obstructions in the floor or ceiling. The amount of cross cutting in the body of the Plank is negligible because, as stated, it is manufactured in lengths to meet



Whether a partition, floor or roof, GYPSTEEL Plank is simple to erect.

the requirements of the job. However, when this is unavoidable, a hack saw is used to cut through the channel reinforcing.

The conventional masonry partition constructed of a multiplicity of small units laid with mortar joints, leaves a wall requiring a wasteful amount of material and labor in order to bring it to the desired degree of finish. A Plank partition being constructed of large units, free from mortar joints, leaves a base for further treatment that is uniform, and a surface that is unusually true. For these reasons, it has been possible to develop new materials and simplified methods for finishing that permit substantial savings.

A choice of a number of treatments is available. For smooth and plaster finishes of all types, we recommend that the vertical joints be pointed and the surfaces covered with one coat of Kanite\* finish, not less than 1/8" thick. It may be troweled smooth to provide a surface suitable for wall paper, or even paint. Or the

\* Kanite is the trade-mark of the Structural Gypsum Corporation as applied to a finishing material developed for application over Gypsteel Plank.





Photo by F. S. Lincoln

The comfort and charm of this living room are increased by the assurance that GYPSTEEL Plank floors and partitions mean security against fire hazard.

Kanite may be simply troweled on and left slightly rough as a base for the conventional white lime putty finish, or for the application of an equally thin coat of Gypsteel Colored Plaster. Gypsteel Colored Plaster is available in a choice of permanent, non-fading colors, suitable for treatment as a sand float finish, or an infinite variety of textured effects. Because of the uniform surface, no plaster grounds are required when these treatments are followed.

If the lowest possible cost in a decorative material is desired, all major spalls and indentations are filled with Kanite, and the V joints are tooled with the same material. The wall is then treated with a good quality size, and covered with one coat of Velachrome\*\*, applied with either a trowel or a brush, and the surface stippled or textured as desired.

Velachrome may be purchased either in a choice of factory mixed, permanent colors, or it may be tinted on the job, before application, to the desired color, or it may be finally finished with either an oil or water paint, or a glaze.

**For Furring.** Gypsteel Partition Plank is also recommended for furring, attached direct to the wood or steel frame on the inside or nailed to furring strips bedded in masonry walls. Furring is treated, for decora-

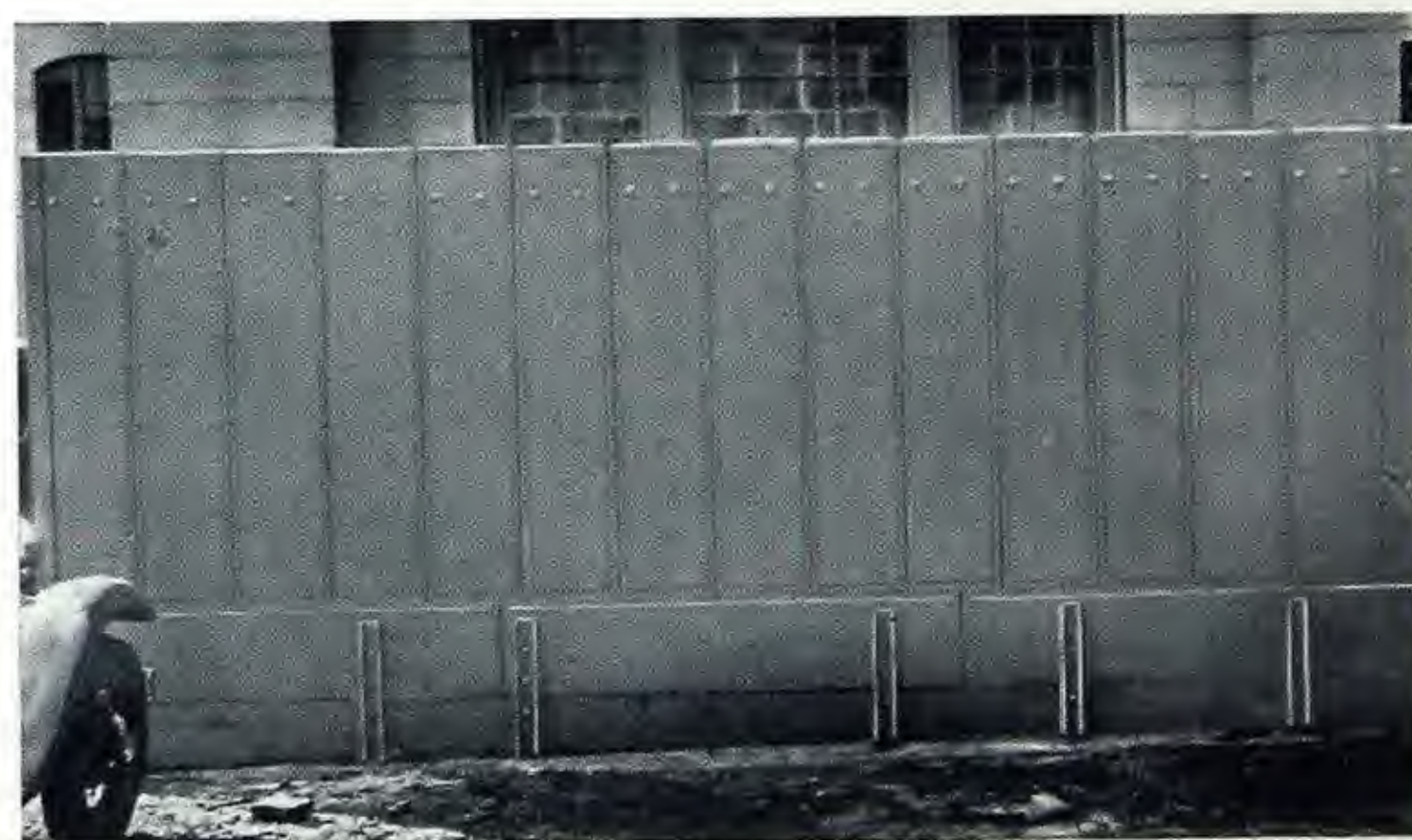
\*\* Velachrome is the trade-mark of the Structural Gypsum Corporation, as applied to a calcium caseinate product, of paint-like character, developed for use with Gypsteel Plank.

tion and/or plastering, in exactly the same manner as for partitions described above. Aside from the substantially increased insulation which the Gypsteel Plank furring affords, it provides, in combination with Plank partitions, a uniform wall surface for decoration throughout the building. It contributes an important degree of fire safeness to wood frame buildings and makes them cooler in summer as well as more easily heated than when built of ordinary frame. Sun porches and similar inclosures, when unheated, are made comfortable for a much longer season.

**For Sheathing.** Senior or Partition Plank is also an ideal material for sheathing both steel and wood frame buildings. It is applied either horizontally or vertically depending upon the method of framing. The supports may be spaced up to seven feet apart. Plank sheathing should be started at least 12 inches above grade.

Besides its insulating value and fireproof qualities, it contributes generously to the rigidity of the frame. Because of its high salvage value it is especially recommended for emergency schools, construction buildings and similar temporary structures.

The exterior may be finished in many ways. For clapboard or shingles, best results are obtained by attaching to grounds, nailed to the Plank. For stucco finish, Plank is prepared in the same manner as wood sheathing, by first covering it with waterproof paper or waterproofing it by any standard method, after which ribbed metal lath is securely nailed in place. If appearance is secondary, the exterior may simply be protected by the application of a heavy coat of asphalt paint.



The wide acceptance of PLANK by the building industry is emphasized by the many novel uses our customers have found for it. Here it fences a transformer station. Others have used PLANK to build doors, cat walks, stairs, etc.

**For Ceilings.** Ceiling Plank is manufactured in one standard size, 2" by 12" by 6'-0". These reinforced ceiling units are made with gypsum ship-lapped joints on both sides and ends. Adjacent to one side of the Ceiling Plank, and running for its entire length, exposed in an offset in the slab so as not to project above its top surface, is a slotted band of copper-bearing, galvanized steel, by means of which the Plank is suspended from the supporting steel frame.





Senior Plank covers both the sides and roof of this building.

Units are also available with parallel steel bands on both sides of the Plank. The latter type is used in erecting the first row of Plank in a ceiling. Steel hangers are attached to the bands through the holes provided, and permanently secured to either the top or bottom flanges of the steel above. Several types of hangers are available to meet varying job conditions. Due to the frequency of the spacing of the holes, the Plank may be *supported at any point*, and is, therefore, adaptable to any spacing of supporting steel beams up to 6'-0".

As succeeding rows of Plank are erected, they rest, on one side, upon the ship-lapped joint of the previously installed row, while the other side is suspended directly from the steel. An important feature is that, due to this method of support, the Ceiling Plank is erected with random end joints, and without regard to the location of the supports, just as for Senior and Junior Plank in floor or roof construction.

An additional advantage is that as each succeeding unit is installed, three steel dowels, cast in each Plank, and running across its width, are driven through the Plank, and into the parallel abutting units for about 2". A simple dowel punch, designed for the purpose, and furnished with the Plank, makes this operation an easy one, and assures the proper penetration. In this manner, the units are permanently locked together, positive support is supplied to all units at the critical point, and all side joints are thoroughly reinforced against vibration, or other movement that may tend to spread them or to crack the finished plaster.

Where the Ceiling Plank is to be left untreated, as in industrial buildings, garages, etc., a clear level surface, high in light reflecting qualities, free from maintenance, and pleasing in appearance is obtained. The effect is further advanced by staggering the end joints to obtain a symmetrical pattern. In commercial buildings, and in buildings of human occupancy, where a finished or decorative ceiling is desired, Gypsteel Ceiling Plank may be finished with plaster in the conventional way, bearing in mind, however, that Gypsteel ceilings do not require either scratch or bond coat of plaster. This is because gypsum plaster forms a natural, chemical bond with a Gypsteel ceiling, making the two practically inseparable. A single brown coat of gypsum plaster, properly sanded, and the usual finish coat are all that is required.

Gypsteel Ceiling Plank in combination with Gypsteel Senior or Junior Plank makes available to the architect, engineer, or builder for the first time, a thoroughly practical floor and ceiling construction that will receive the highest fireproof rating; light in weight, eliminating water from construction, assuring almost incredible speed in installation, and permitting of the utmost economy in framing design and the utilization of the most advanced types of steel beams and joists



GYPSTEEL Ceiling Plank affords full fire protection to floors and roof beams and provides an excellent plaster base.

which have been developed especially for modern building demands.

In addition, Ceiling Plank provides a means of economically fireproofing roof trusses, while furnishing at the same time, a flat, unbroken ceiling of high insulating value that will make substantial returns in the initial heating plant investment and the annual fuel bill. These factors have been responsible for the use for many years of ceilings of this type in theatres, auditoriums, aeroplane hangars, garages, and certain types of buildings in many of the leading industries.



# GYPSTEEL GYPSUM PLANK

## For Roof Replacements



GYPSTEEL GYPSUM PLANK is unusually well adapted for roof replacements, particularly when it is imperative that the building shall not be left open because of possible interference with plant operations or damage to costly machinery and materials in process of manufacture. Gypsteel Plank is so light—11 pounds per square foot—that it may be applied over the same frame that would support practically any other type of roof. Senior Plank is suitable for spans up to seven feet, while Junior Plank may be used where they are four feet or less. It is not necessary that the purlins be uniformly spaced nor that they be parallel. Contrary to the requirements for most factory-fabricated constructions, the width of bearing is unimportant. It is not even necessary to take any preliminary measurements beyond assuring that the maximum permissible spacing is not exceeded. As joints are broken to come at random, you have a freedom from "set" requirements not possible with any other type of roof. Plank is readily cut around openings or unexpected obstructions and may even be "warped" where supports are not exactly in the same plane. Furthermore, painstaking

care is unnecessary to obtain a tight fit around ventilators, windows, hips and valleys, etc. Plastic gypsum, which binds perfectly to Plank, can be used to patch up rough edges quickly, fill open joints at the Plank ends, rounded corners, etc. In short, here is a material that meets job conditions as it finds them, eliminates costly changes in the frame that are frequently necessary when applying new roofs, and permits a speed that assures keeping your building water-tight throughout the entire replacement operation.

Gypsteel Plank is so easy to erect. As soon as you have removed a strip of the old roof two feet or more wide, you may begin to apply the new deck. The tongued and grooved joints mesh easily. The fastening clips are quickly attached and you immediately have a working platform.

Either a temporary layer of waterproof paper or the first layer of felt of a built-up roofing may be quickly tacked down over the Plank roof, when the day's area is completed, making the roof weather-tight for an indefinite period or until the permanent roofing can be applied.



Work goes on as usual when PLANK is used for roof replacements.





# GYPSTEEL ACOUSTICAL PLANK

## Brings New Opportunities to the Architect and Engineer and Suggests a New Field to Conquer



General interest in the subject of acoustics is a comparatively recent development, but an increasingly important one. Architects and engineers have recognized for some time the desirability of providing acoustical treatment in almost every type of building and occupancy. While recent years have witnessed important advances in our knowledge of this problem, the costs of most methods of treatment have remained so high that it has been available only where its need was of first importance, as in theatres and auditoriums, or where expense was a minor consideration.

It has remained for the Structural Gypsum Corporation to develop in Gypsteel Plank a suitable unit with high sound absorptive qualities, and yet moderate in cost. Stated in the simplest terms, it is merely the addition of good acoustic properties to a permanent roof deck that has already been proven structurally sound.

For frequencies between 256 and 2048 cycles (most noises lie within these limits) Acoustical Plank has an average efficiency of 48% sound absorption. An unusual feature is that Gypsteel Acoustical Plank is available not only in its natural gray white color, but at slight additional cost, in a choice of eight permanent colors. The ceiling may also be tinted or stenciled repeatedly with negligible effect upon its acoustical properties. It combines in one unit a structural roof deck of proven merit with an acoustical ceiling of high quality. There is an obvious substantial saving in labor, and an entire elimination of any additional framing frequently required with acoustical treatments.

Its low cost makes it available not only for drill halls, armories, gymnasiums, and auditoriums, but for industrial buildings as well. The value of many pub-

lic assembly halls has been seriously impaired and their use limited by the absence of acoustical treatment. Frequently this omission has been due not to lack of appreciation on the part of the architect of its usefulness, but to the necessity of economizing in building costs. Sometimes it has been expected to add such treatment at a later date when additional funds would be available. Such false, though enforced economy, is no longer necessary when it is planned to use Gypsteel Plank, for the cost of this roof deck with acoustical treatment included will be little, if any more, than the cost of other roofs, alone, of comparable quality. In certain types of plants, this increased efficiency, resulting from improved working conditions, will sufficiently lower manufacturing costs as to render the additional expense of sound treatment, by means of Acoustical Plank, a very profitable investment indeed.

Twenty-five years ago, the founders of this organization pioneered in the economic importance of saving fuel in industrial plants through the use of gypsum roofs, the merits of which in insulating against heat loss were only then beginning to be appreciated. Today every experienced builder recognizes the importance of this consideration, and hardly a factory is built, re-

quiring a heating plant, in which this factor is not of dominant consideration in selecting the roof deck. We believe that in many instances proper acoustical treatment in industry is as important as protection against excessive heat loss, and that this problem will receive increasing consideration from industrial engineers. In planning new buildings, or in re-roofing old, the prudent manufacturer will do well to consider Gypsteel Acoustical Plank.

In the industrial field, exhaustive tests by leading authorities have demonstrated a marked increase in the productive capacity of workers following a reduction in sound reverberation produced by normal factory operations. Science has discovered, in repetitive factory operations\* requiring skillful coordination of the eyes and hands, two important facts, hitherto unsuspected by many plant executives, that:

1. Output is increased and errors are reduced with a reduction in noise from *any point* of intensity above a moderate level.
2. The *more intense the level* from which the reduction is made, the *greater the gain* in working efficiency. Thus, we answer the common belief that because a plant may be very noisy, there is no value in making any correction that would not reduce it to a relatively quiet level.

\* Excellent examples of this type are found in line assemblies in automobile plants, packing and labeling in canning factories, certain textile plant operations, etc.



# GYPSTEEL CEILING PLANK



Gypsteel Ceiling Plank is designed to furnish a flat ceiling of class "A" fireproof construction in steel frame buildings of any type. Used in combination with Senior or Junior Plank, it is suspended beneath the supporting steel, completely fireproofing these members with 2 inches of solid gypsum and making possible a light weight, flat ceiling floor system, with the highest fireproof rating. Suspended beneath the bottom chords of roof trusses it not only fireproofs the steel, but effects substantial savings in fuel through its own high insulating value, and by isolating the normally unused space above the bottom chords. Gypsum ceilings have been widely used in this manner in theatres, auditoriums, garages, hangars, etc. It is standard construction with the U. S. Army and with many industrial companies.



Because it insulates against heat loss as well as protects against fire, Ceiling Plank is recommended for garages, auditoriums, theatres, etc.

Many years before the development of Ceiling Plank, this Corporation originated and perfected precast gypsum units to provide flat ceilings under, and to afford full fire protection for supporting steel floor members, roof trusses, etc. These Gypsteel Precast Ceilings fireproof the supporting floor steel in many well known and high class apartments, hotels, schools, and colleges, hospitals, mercantile buildings, theatres, museums, libraries, municipal buildings, etc. However, in the old form, their application was limited because they were only adaptable to fixed and comparatively small beam or joist spacings. The necessity for governing the spacing of the steel by the limitations of the slab dimensions rather than the basic factors of design, frequently made difficult the most economical distribution of the members in the structural frame,



Museum of Natural Science, Buffalo, N. Y., Esenwein and Johnson, Architects. Thomas H. McKaig, Engineer. Felton Construction Company, Builders.

GYPSTEEL Precast Ceilings have been used in many monumental buildings.

and sometimes created awkward framing conditions.

The new Gypsteel Ceiling Plank contains all of the basic advantages of the original Gypsteel Precast Ceiling with the important additional advantage that like its companion units, Junior and Senior Plank, it is adaptable to any spacing of steel within generous limitations and leaves the engineer free to design his structural frame practically independent of any consideration of the ceiling units.

Particular care has been taken in the design of Gypsteel Ceiling Plank to provide a unit adequately reinforced and of a size that is convenient to handle and economical to erect. Likewise, important consideration has been given to simplicity of application and adaptability to varying job conditions. These problems are ideally met with Gypsteel Ceiling Plank. Units are of a weight and size that one man can handle. The Plank is supported at any point along its length by easily attached hangers of ample strength. Ship-lapped joints facilitate erection and all reinforcing steel and hangers are adequately protected against fire by gypsum. There are no joints to be grouted later. It is easy and logical to erect Ceiling Plank after the floor above has been completed and the auxiliary trades such as electricians and plumbers have completed their work in the space between. Side joints are bonded together and reinforced with steel while end joints are staggered; thus eliminating lines of weakness common with other types of unit ceilings from which serious plaster cracks may develop.



# Specific Advantages of GYPSTEEL GYPSUM PLANK Applying to All Types



**Permanence.** Gypsum floors and roofs have been in wide use for nearly two score years. They are found in every type of building, including metropolitan skyscrapers, monumental buildings, hotels, schools, apartments, churches, theatres, industrial buildings of every type, commercial buildings—in fact, it is difficult to name any class of building in which gypsum has not been used for structural purposes. And the record is an enviable one. For many years this organization has specialized in design and manufacture of pre-cast gypsum products for structural purposes and has millions of feet in successful use. Gypsteel Plank is one of the latest developments based on this long experience.

The type of metal used for both the binding of all types of floor and roof Plank as well as for the supporting band in Ceiling Plank was adopted, after exhaustive research, as offering the best service of any



Gypsum floors have been in successful use for nearly forty years. In selecting a permanent floor for the thirty story Girard Trust Building in Philadelphia, Pennsylvania, McKim, Mead and White, architects, chose Short Span Precast Gypsum Floors, as manufactured by this company.

commercially produced material of this type, suitable for the purpose. The steel sheet is copper bearing, generally recognized as substantially increasing the resistance of steel to corrosion. The sheet is doubly protected with a heavy, tight coat of galvanizing on both sides. The shape of the binding for the floor and roof Plank is so designed as to assure the maximum protec-

tion against corrosion to the cut edges. Extreme care has also been taken in the design of the rolls which shape the sheet to minimize damage to the protective galvanized coating.

Despite the care that has been used in the design of all Gypsteel Plank, to assure a product of merit and of long life, it should be recognized that when used for roofs under certain conditions other Gypsteel pre-cast roofs are more suitable. When applied over manufacturing buildings in which wet processes or others tending to cause condensation are in use or where acid conditions are present, it is recommended that, as erected, the metal binding should be additionally protected with a good quality paint especially selected for the purpose. When installed, the entire ceiling should then be painted with a first class moisture and acid resisting paint designed for application over gypsum. Similarly, when Gypsteel Plank is used for floors over unexcavated areas, with the underside exposed, the steel binding should be painted as erected, and the underside should be thoroughly protected with a heavy coat of asphalt paint.

The gypsum composition in Plank will not warp, shrink or rot. It is vermin-proof.

**Insulation.** The composition used in Gypsteel Gypsum Plank offers the highest insulation against the transmission of heat of any structural material. This corporation was one of the pioneers in educating owners of heated buildings on the very real economies that may



Windham House Dormitory, Connecticut College for Women, New London, Connecticut, Shreve, Lamb, and Harmon, Architects. H. R. Douglas & Son, Contractor. GYPSTEEL Plank used throughout for floors.



be effected through the intelligent use of insulation in roof construction. We must not lose sight of the fact, however, that there are many parts of the building below the roof through which heat losses occur, and that while theoretical savings may be made with additional roof insulation, there is a point beyond which these are actually negligible.

Many conflicting claims are made on the subject of heat insulation. The cautious buyer will do well to seek the verdict of unbiased authority. Probably the most carefully compiled data on this subject is to be found in the yearly Guide of the American Society of Heating and Ventilating Engineers. A reference to this Guide will show that 2" of gypsum composition such as used in Gypsteel Plank is the equivalent, in insulating value, of approximately nine or ten inches of concrete, or of an eight-inch brick wall. In most cases the degree of insulation offered by Gypsteel Plank is ample



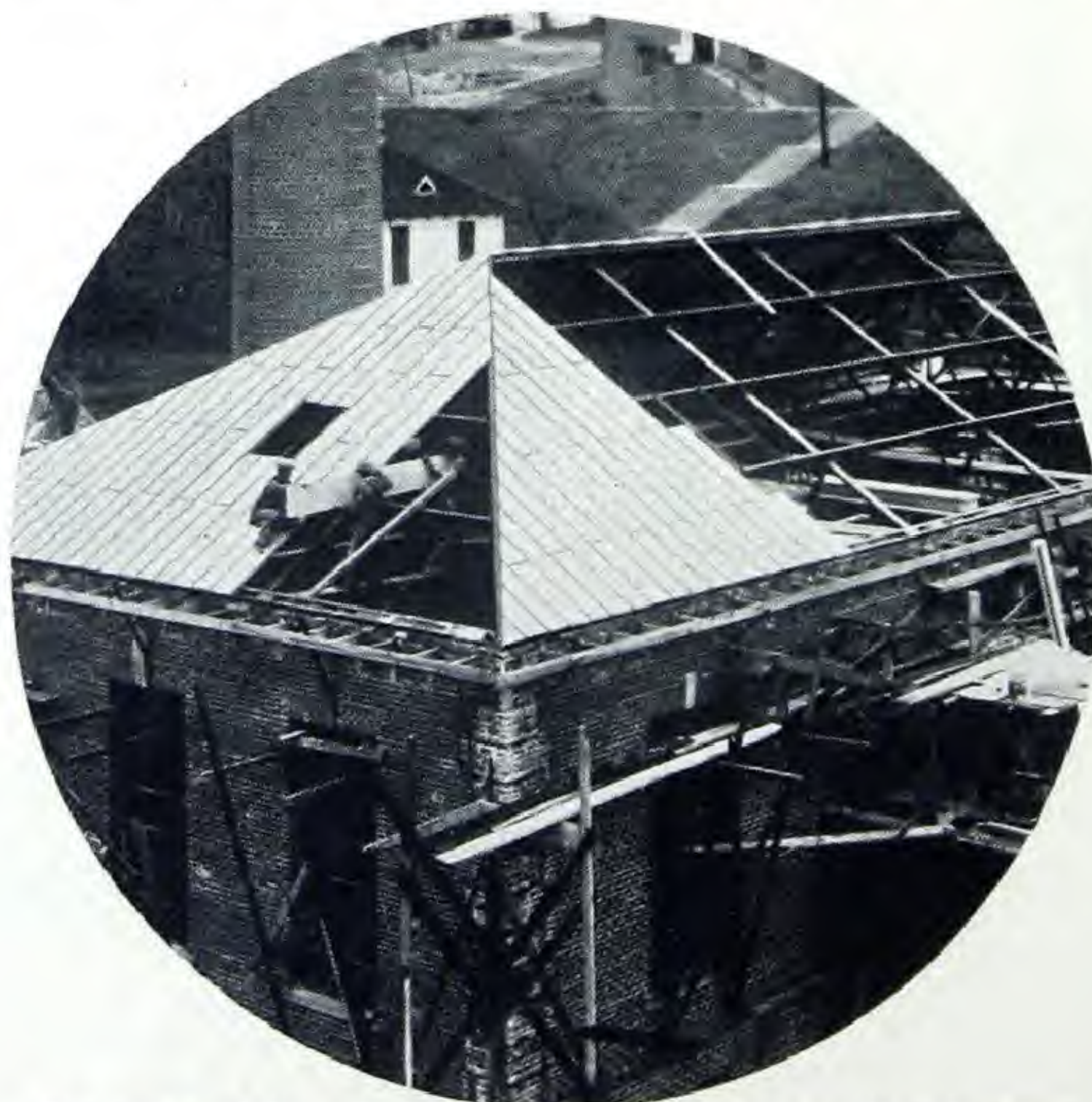
**GYPSTEEL** Gypsum Plank has made this residence fire-safe, more comfortable in winter, and quiet. To hundreds of owners it is giving the advantages of luxury construction at moderate cost.



**PLANK** is a "man's" material. It requires no wet nursing. You use it—even abuse it—as you would expect of any practical building product.

to guard against excessive heat loss. Where further insulation may be desired, because of possible excess condensation, such as in an extremely cold climate or under conditions of high humidity or high temperature combined with humidity, it is thoroughly practical and economical to supply such additional insulation, by the application directly over Plank of material developed primarily for insulating value.

**Fire Resistance.** Gypsteel Gypsum as used in Plank is absolutely incombustible. Two inches of gypsum is universally recognized as the highest type of fireproofing and is approved in practically all cities as fire protection for beams and girders in even the tallest structures. The sound-absorbing filler in Acoustical Plank will not support combustion.



The adaptability of **PLANK** is one of its outstanding features.



**Simplicity.** The erection of Gypsteel Plank is a simple hammer and saw job. There is nothing about it to make it hard to use and handle. It may be cut, sawed or bored as readily as wood.

**Speed of Erection.** The simplicity of Gypsteel Plank makes it quick to erect. With large units of reasonable weight the areas grow fast. With broken joints there is little cutting, and practically no waste. There is no form work—no water to dry out—nothing to "set". No matter how you are using it, it is ready for the work of the succeeding trades as soon as it is placed.

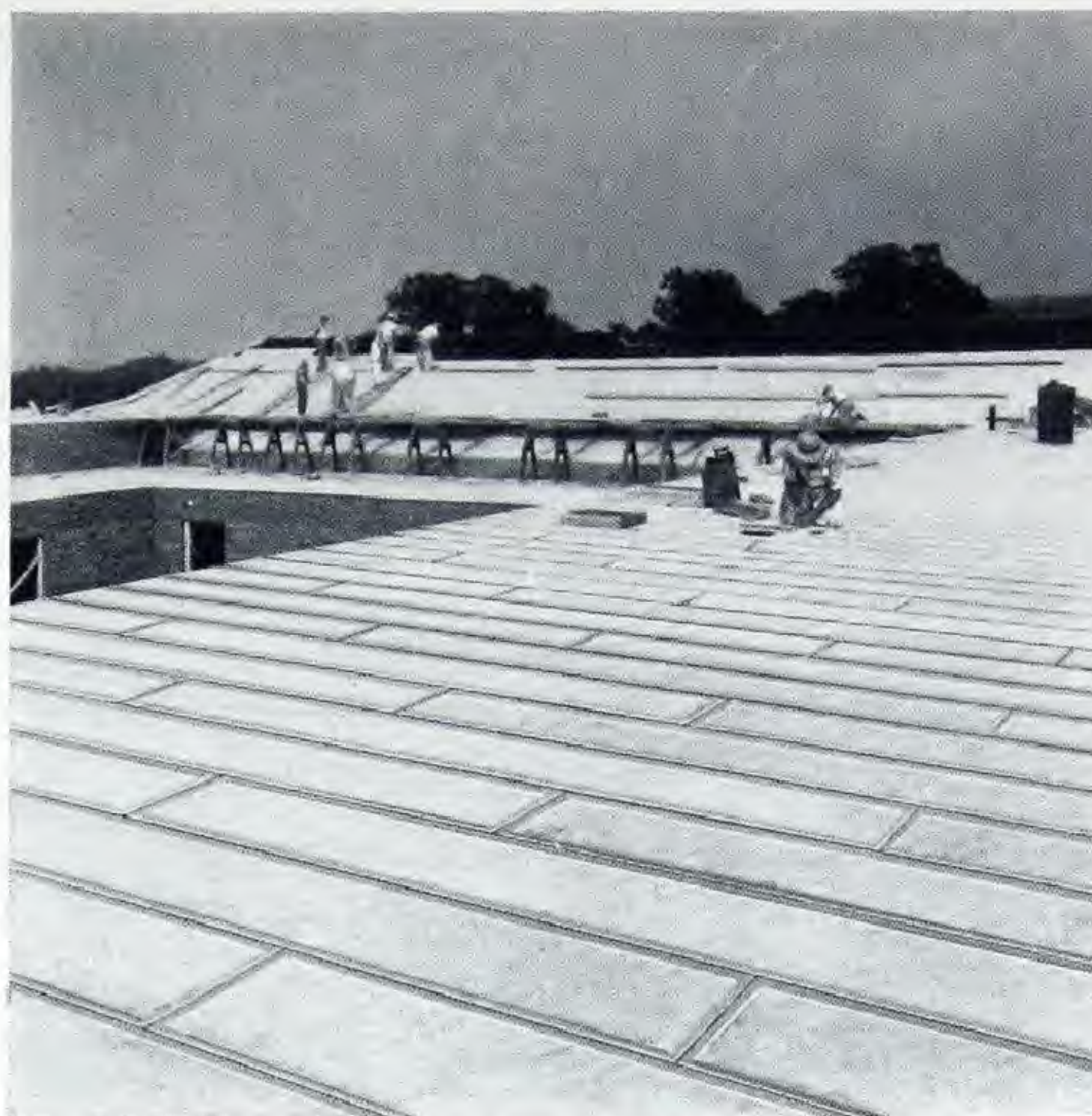
**Termites.** The importance of termites, or "white ants" is in the damage they frequently cause to buildings. They commonly enter a structure either through portions of the wood frame bearing on the ground, or by means of small tunnels over the surface of brick or stone. They prefer to live in darkness and feed upon the core of the object they attack, so that their presence is frequently not made known until most serious inroads have been made upon the structural members. Once established, they are difficult and expensive to control.

They have been found chiefly, in this country, in the southern states, but in recent years reports of their presence in the North, particularly along the seaboard, have grown in frequency. Circumstances, such as recently reported of the destruction of a house and barn near Brussels, Illinois, by these insects, are not unusual.

Gypsteel Gypsum actually contains an ingredient which is a known inhibitive to termites, and which is not present in other gypsum. Gypsteel gypsum blocks, identical with the composition used in all forms of Plank, have undergone a comprehensive series of tests at the University of California, under the direction of



GYPSTEEL Plank has practically all of the important characteristics of ordinary lumber.



GYPSTEEL Plank is moderately priced. Erection cost is unusually low. A truly economical material.

Professor Charles A. Krofold, Chairman, Biological Subcommittee of the Termite Investigation's Committee. As a result, it was conclusively proven that none of these destructive insects can live in Gypsteel Gypsum Composition.

**Light Weight.** Gypsteel Gypsum Plank weighs only 11 pounds per square foot. Acoustical Plank weighs 9 pounds. In using Gypsteel Plank for floors, roofs, partitions or ceilings, substantial savings can usually be made in the tonnage of steel required for the frame, as compared with other materials of comparable quality. Its lightness permits its use over frames designed for almost any other type of construction. Naturally, this also contributes to ease of handling.

**Adaptability.** Gypsteel Plank is adaptable to so many uses — roofs — floors — partitions — ceilings — sheathing and numerous others — that it is an economical material to carry in stock ready for that emergency building or alteration.

**Economy.** All of these qualities combine to make Gypsteel Plank the *economical* material. With lightness of weight and strength to take long spans, it permits steel savings. With its fire resistant properties, insurance rates are frequently brought lower. Its insulating qualities result in fuel savings. Because of its durability, its maintenance costs are a minimum. Because it is simple and quick to erect, the time and labor required are reduced to the lowest possible factor.



# Advantages Applying to Individual Types



**THE STRENGTH AND SAFETY OF SENIOR, JUNIOR AND ACOUSTICAL PLANK.** The strength of a Gypsteel Plank roof or floor is in the meshed steel binding. This binding forms a strong I-beam stiffened laterally by the gypsum core. The gypsum itself spans only about 13" and when used for floors or roofs, it is reinforced with galvanized welded wire mesh. By breaking the joints in floor and roof construction, the steel I-beam is continuous over several supports. Through the meshed steel binding two-way distribution is assured and any concentrated load is distributed over a wide area.

Hundreds of thousands of feet of Gypsteel Plank have been installed in floor and roof constructions under every type of service. And even when subjected to abuse for which it is not designed, it has a distinguished record for service. The claims for the strength



Any floor must sustain greater loads during construction than ever after. GYPSTEEL Plank is built with "extra" strength to withstand job abuse.

of Gypsteel Gypsum Plank are fully substantiated by a series of load tests which have been made by the Civil Engineering Testing Laboratories at Columbia University. A facsimile copy of the report by the University on these tests will be sent upon request.

## THE IMPORTANT FEATURES OF ACOUSTICAL PLANK

**Sound Absorption.** Tests on Acoustical Plank by the U. S. Bureau of Standards show that it has an average over all sound-absorptive efficiency of 48% for frequencies between 256 and 2048 cycles per second. As all materials having a value of 20% or more are



Modern plant executives are learning that reduction of noise means more production and fewer errors. Acoustical Plank combines in one unit a roof deck of unusual merit, with a ceiling having high sound absorbing properties. Its cost is moderate.

classed as acoustical products, this will be recognized as a very high standard. Acoustical Plank compares favorably with any commercial material of the same thickness used in a similar manner.

**Insulation.** Acoustical Plank has the same fine quality of insulation against heat loss characteristic of all Gypsteel roofs, *plus* the additional value given by the acoustical filler. According to tests made by the Electrical Testing Laboratories of New York City, the filler in Acoustical Plank has a coefficient of heat transmission per inch of thickness, per square foot, per degree difference in temperature, per hour, of 0.58 B. T. U. Based upon values and formulas recommended in the 1933 edition of the American Society of Heating and Ventilating Engineers Guide (the accepted standard authority) the flow through a flat roof consisting of a 2" deck of filler and gypsum, as in Acoustical Plank, and built-up tar and felt roofing, would be 0.296 B. T. U.

**Fire Resistance.** Acoustical Plank offers tremendous advantages over many competitive products in its removal of the fire hazard. Some of these are highly inflammable, shouldering a serious responsibility on those using them in buildings of human assembly, particularly in schools. The qualities of both gypsum and steel in reducing fire risk are well known. The filler used in *Acoustical Plank* is so treated that it *positively will not support combustion*.

**Economy.** Acoustical Plank affords several savings beyond those that apply equally to all types:

1. Two materials are combined in one, reducing the costs of shipping, trucking, handling, and erecting;





In auditoriums, gymnasiums, armories, Acoustical Plank eliminates costly ceiling framing and expensive scaffolding, usually required when installing other sound absorbing mediums.

as well as concentrating responsibility in one manufacturer.

2. Eliminates the need for supplementary framing, usually required at the ceiling level for the support of acoustical units. Eliminates scaffolding where units may be nailed or cemented to the under surface of the roof slab.

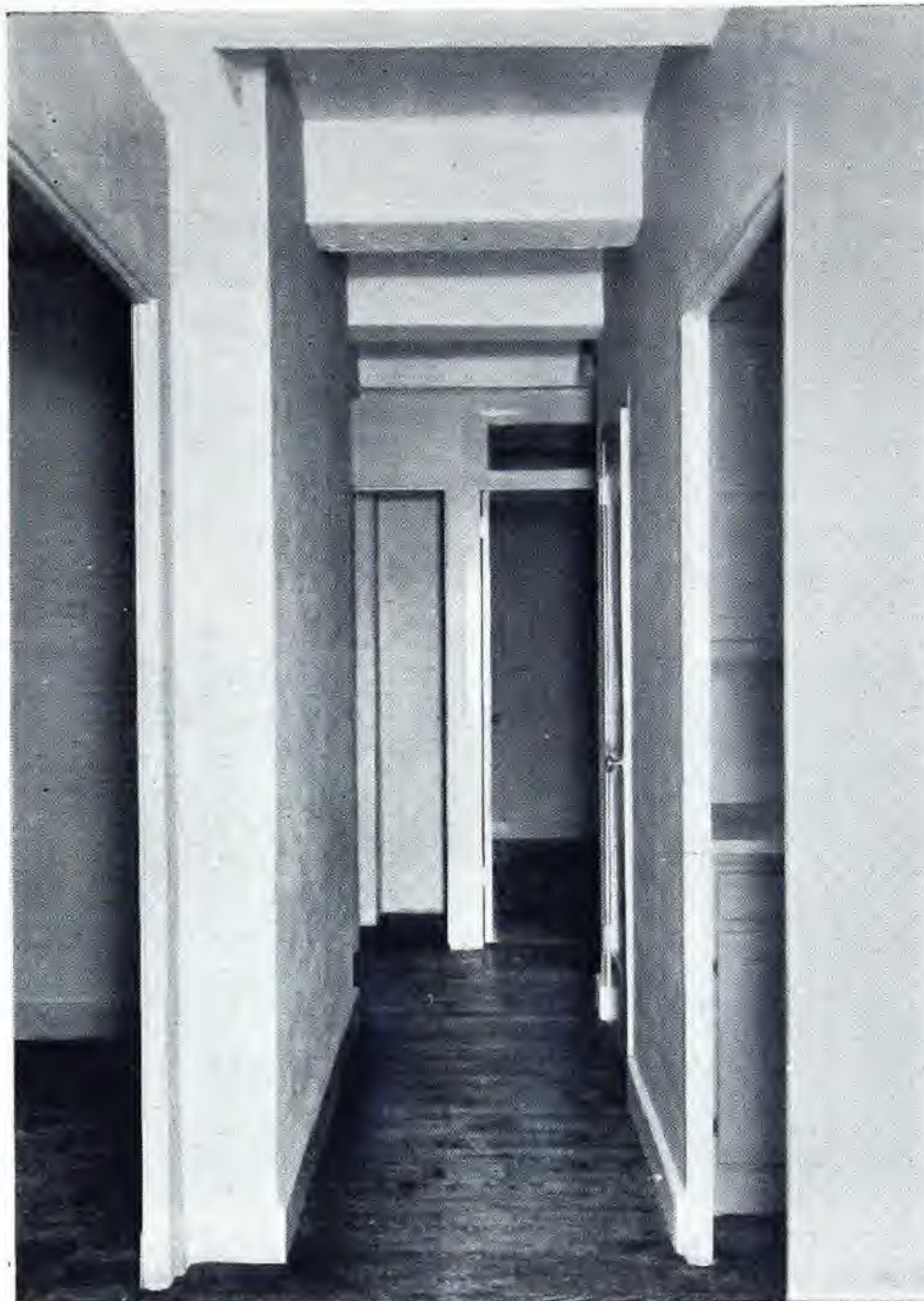
3. Acoustical Plank is available in a choice of colors, offering further savings in building through the elim-



GYPSTEEL Plank meets every requirement of modern low cost housing. It is adaptable, fire-safe, quick to erect, and low in cost.

ination of expensive ceiling decoration. Where other treatment is desired, the ceiling may be treated repeatedly to suit individual taste, with negligible effect upon its sound absorbing value.

4. Finally, Acoustical Plank is so priced that usually the combined cost of the materials and labor will be less than any combination of accepted roof deck of comparable merit, and acoustical treatment of equal efficiency.



Partition Plank is economically and pleasingly finished with Kanite.

#### ADDED ADVANTAGES OF PARTITION PLANK

**Elimination of Water.** Probably of greater importance than with any of the other types of Plank, is the reduction to a negligible quantity of the water needed in completing a Plank partition. *Water is one of the most expensive materials entering construction*, considering the dangers from freezing, damage frequently incurred, and delays that it invariably causes. Partitions and their plastering are among the last structural operations in a building. In the average structure, many gallons of water are used in the partition mortar, and thousands more in the plaster. This water must be evaporated before the trim is installed, and the decorating done, if satisfactory results are to be assured.

Plank partitions are laid dry. The small amount of material with which the joints are pointed will normally dry out in a few hours. If the walls are covered with either Velachrome or a  $\frac{1}{8}$ " coat of Kanite, they may ordinarily be safe for final decoration within two



or three days of the time when they were first erected.

**Saving Space.** The common 3" block and plaster partition will occupy and waste from 3 to 8 per cent of the floor space in an average building. Partition Plank cuts this waste in half. The practical saving is even greater than at first indicated, for while the percentage applies to the total area, substantially all of the space saved, may be added to the usable, income-producing portions.

#### QUALITIES APPLYING PARTICULARLY TO CEILING PLANK

**Fire Protection.** The use of gypsum for the protection of steel members against the effects of fire has long been recognized and accepted at the highest rating by fire underwriters and building codes of the principal cities. The superiority of gypsum lies not merely in its incombustibility, but, more particularly, in its efficiency in protecting the structural steel against injurious temperatures during a fire, and in its freedom, under high temperatures, from the expansion, cracking, spalling, or fusing frequently experienced with other materials in severe fires.



A modern residence using GYPSTEEL Plank for floors, roofs, and partitions. Holden, McLaughlin Associates, Architects, American Houses, Inc., Contractors.  
(Photo by F. S. Lincoln)

The outstanding superiority of gypsum for this purpose has been shown by its remarkable record in actual fires in gypsum protected buildings, as well as by many tests by recognized laboratories. Several official fire and water tests on 2" gypsum ceilings have been made by Columbia University under the rigid provisions of the Building Code of New York City.

In these tests, the ceilings were subjected to an average temperature of 1700° F. for four hours, immediately followed by a flood of water. The success with which the ceilings performed their protective functions in every case is well illustrated by the record of temperatures of the supporting steel directly above the ceilings. The maximum temperature reached by the steel at any time in any of these tests was 315° F.

**Alterations and Additions.** Gypsteel Plank ceilings and floors are particularly well adapted for use in installing mezzanines, balconies, loggias, etc., in existing



Hershey Community Center, Hershey, Pennsylvania, C. Emlin Urban, Architect, Hershey Lumber Products, Builders. GYPSTEEL Precast Ceilings used throughout.

buildings, or for the addition of floors above the existing structure. This work must often be carried on without interrupting the use of the premises. Absence of forms and dripping water, as well as the rapidity of the Plank installation, insure a minimum of annoyance to occupants, and a maximum of speed in accomplishing the work.

The lightness in weight of Gypsteel Plank is a further important advantage in this class of work. In many instances this advantage will permit two or more stories to be added to an existing building without changing foundations or steel work, where but one could be added if the original construction was used.

**Makes Joist Construction Fireproof.** Gypsteel Plank ceilings are recognized as Class A fireproofing, and, therefore, permit the use of open web steel joists in buildings beyond the present height limitations for these members with metal lath ceilings below. The architect or engineer who wants to use steel floor joists for their economy and convenience, but at the same time achieve high fireproof construction, will use Gypsteel Ceiling Plank. This is the practical method; simple to erect, and moderate in cost.



Genesee Valley Trust Building, Rochester, New York, Voorhees, Gmelin & Walker, Architects, Carl C. Ade, Associate, A. Friederich & Sons Co., Contractors. GYPSTEEL Precast Ceilings used with open web steel joists throughout.



# SPECIFICATIONS

## For Senior Plank Floors or Roofs

All roofs (or floors) shall be constructed of steel bound Gypsteel Gypsum Senior Plank as manufactured by the Structural Gypsum Corporation. This Plank shall consist of factory moulded units 2" thick by 15" wide by 10'-0" long, bound and reinforced on the sides and ends by "tongued and grooved" galvanized, copper-bearing steel channels, 2" deep. The gypsum core shall be reinforced with steel mesh.

The "groove" channel shall have formed at the center of its web, a triangular groove running longitudinally, not less than  $\frac{1}{2}$ " deep, the sides of which shall form an angle with each other of not more than 20°. The "tongue" channel shall have formed in its web a wedge-like tongue which will accurately and snugly fit the above described groove.

The Plank shall be laid directly over supporting purlins (or joists or beams) to which they shall be fastened down by steel clips, furnished by the manufacturer, engaging their top flanges, and securely nailed to the sides of the Plank with four penny galvanized slater's nails. Plank shall be laid with "tongues" meshing into "grooves" of adjoining units. End joints need not come over the supports, but shall be broken with the maximum practicable distance between them.

**Note:** This specification is recommended for floors on spans up to 5'-0" where the total loads do not exceed 150 pounds per square foot. For roofs it is recommended on spans up to 7'-0", where the total loads do not exceed 75 pounds per square foot.



# SPECIFICATIONS

## For Junior Plank Floors or Roofs

All roofs (or floors) shall be constructed of steel bound Gypsteel Gypsum Junior Plank as manufactured by the Structural Gypsum Corporation. This Plank shall consist of factory moulded units 2" thick by 15" wide by 6'-0" long, bound and reinforced on the sides by "tongued and grooved" galvanized copper-bearing steel channels, 2" deep. The gypsum core shall be reinforced with steel mesh.

The "groove" channel shall have formed at the center of its web a triangular groove running longitudinally, not less than  $\frac{1}{2}$ " deep, the sides of which shall form an angle with each other of not more than 20°. The "tongue" channel shall have formed in its web a wedge-like tongue which will accurately and snugly fit the above described groove.

The ends of the Plank shall be shaped to form a ship-lapped gypsum joint between abutting units.

The Plank shall be laid directly over supporting purlins (or joists or beams) to which they shall be fastened down by steel clips, furnished by the manu-

facturer, engaging their top flanges, and securely nailed to the sides of the Plank with four penny galvanized slater's nails. Plank shall be laid with "tongues" meshing into "grooves" of adjoining units. End joints need not come over the supports, but shall be broken with the maximum practicable distance between them.

**Note:** This specification is recommended for floors on spans up to 3'-0" where the total loads do not exceed 120 pounds per square foot. For roofs it is recommended on spans up to 4'-0", where the total loads do not exceed 75 pounds per square foot.

**Note:** Most manufacturers or trade associations of manufacturers of various types of floor finishes and roofing materials have prepared detailed specifications for the application of their products over Gypsteel Plank. Many of these will be found in Sweet's Architectural Catalogs or may be obtained directly from the manufacturer. We will be glad to supply the approved specifications of the manufacturer of any finished flooring or roofing in which you are interested.



# SPECIFICATIONS

## For Acoustical Plank Roofs



All roofs shall be constructed of steel bound Gypsteel Gypsum Acoustical Plank, as manufactured by the Structural Gypsum Corporation. This Plank shall consist of factory moulded units, 2" thick by 15" wide by 10'-0" long, bound and reinforced on the sides and ends by "tongued and grooved", galvanized, copper-bearing steel channels, 2" deep.

The "groove" channel shall have formed at the center of its web, a triangular groove running longitudinally, not less than  $\frac{1}{2}$ " deep, the sides of which shall form an angle with each other of not more than 20°. The "tongue" channel shall have formed in its web a wedge-like tongue which will accurately and snugly fit the above described groove.

The frame formed by the steel binding shall be filled, at the factory, with a sound absorbing medium, substantially 1" in thickness, finishing flush on one side with the channel flanges of the binding. In the remaining space in the frame shall be cast Gypsteel Gypsum Composition, reinforced with steel mesh.

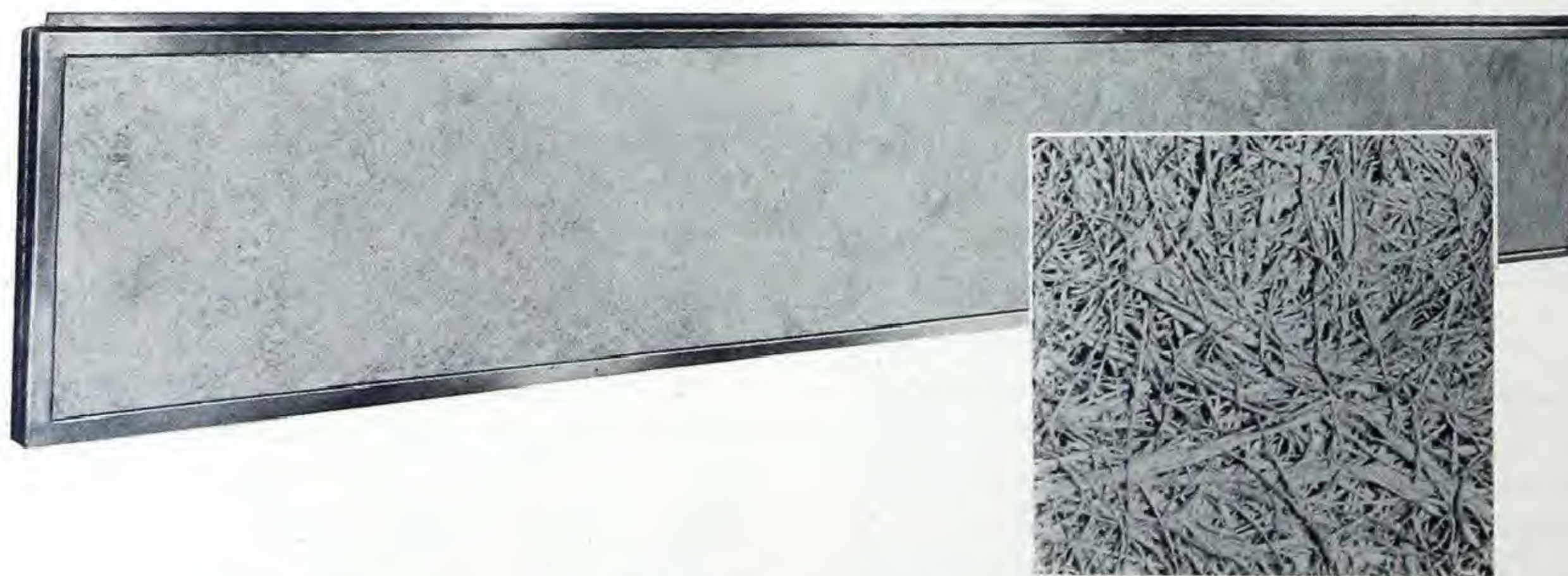
The Plank shall be laid directly over supporting purlins (or joists or beams) to which they shall be

fastened down by steel clips, furnished by the manufacturer, engaging their top flanges, and securely nailed to the sides of the Plank with four penny galvanized slater's nails. Plank shall be laid with "tongues" meshing into "grooves" of adjoining units. End joints need not come over the supports, but shall be broken with the maximum practicable distance between them.

Acoustical Plank shall be stored under dry cover where it will not collect dirt. Care shall be taken in handling not to abrade the ceiling surface. No material shall be erected in wet weather. All areas completed shall be carefully protected from exposure to the elements either by tarpaulins or waterproof paper.

**Note:** *This specification is recommended for roofs on spans up to 7'-0", where the total loads do not exceed 75 pounds per square foot.*

**Note:** *Nails should not be driven into Acoustical Plank, except through the steel binding. For built-up roofings, follow manufacturers' specifications for application over precast concrete roofs. For slate, tile, etc., specify wood battens, running across the Plank, and attached to it by nailing through the binding.*



GYPSTEEL Acoustical Plank

The surface of the PLANK is shown at the right in approximately  $\frac{1}{2}$  actual size.



# SPECIFICATIONS

## For Gypsteel Plank Partitions

All partitions where shown shall be constructed of Gypsteel Gypsum Partition Plank, as manufactured by Structural Gypsum Corporation. This Plank shall consist of factory moulded units, 2" thick by 15" wide. Along one side edge, for its entire length, shall be moulded a beveled gypsum "tongue"; on the opposite side edge there shall be a "groove" matching the "tongue". The ends shall be square.

Plank shall be reinforced longitudinally with two steel channels, one inch deep. All units shall contain steel dowels, cast in the Plank, and running across the full width. Plank, two feet or more in length, shall contain not less than two dowels, not more than four feet on centers.

The Plank shall be set vertically to reach from floor to ceiling, with the sides meshing closely. Plank shall be temporarily held in place between the floor and ceiling with wedges. As each unit is secured in place, the steel dowels shall be driven through (by means of a dowel punch avail-

able from the manufacturer) and into the next abutting Plank, or adjacent wall.

When a suitable length of partition, or a full panel has been erected, check it for plumb and true line. Set a straight edge across the face, and, where necessary, drive units into line. Set all wedges tightly, using not less than two wedges per Plank. Cut off wedges flush with face of partition.

The space left between the end of the Plank and the ceiling, or the floor, shall be filled solidly with a stiff mixture of Kanite, as manufactured by Structural Gypsum Corporation. The partition is now ready for the finishing treatment.

**Note:** *This specification is recommended for non-bearing partitions of a maximum height of 9'-0".*

**Note:** *Most manufacturers of doors, frames, and bucks, electrical wiring equipments, etc., are now prepared to furnish such equipment, designed for use with Gypsteel Plank. In case of difficulty in locating such equipment, or accessories, we shall be glad to furnish the names of manufacturers producing them.*



A typical Plank Partition ready for decoration in an office building.



GYPSTEEL  
Partition  
Plank



Permanent, fire-safe homes of moderate cost are made possible by Plank partitions and floors. The wood block flooring in this living room is laid direct on Senior Plank. The walls are finished with Kanite.



# SPECIFICATIONS

## For the Decoration of Gypsteel Plank Partitions or Furring with KANITE

**Note:** Kanite is the trade mark of this Corporation as applied to a material especially developed for application over Gypsteel Plank. It is packed in 100 pound bags.

All Gypsteel Plank partitions (and furring) where indicated, shall be surfaced with one coat of Kanite as manufactured by Structural Gypsum Corporation. Prepare Kanite by placing it in one end of mixing box, and water in the other. Hoe the Kanite into the water, mixing thoroughly to the proper consistency for application. Do not mix more material than can be used in one and one-half hours. Do not add any sand or other ingredients. Do not retemper after it has once started to set.

First, point up all joints, broken edges, and major indentations in the Plank partitions with Kanite of stiff

consistency. To facilitate this operation, go over the joints, just prior to their filling, with a brush and water.

When the Kanite has set and dried, apply over the entire surface with a trowel a coat of Kanite not less than  $\frac{1}{8}$ " in thickness. Just prior to its application, the Plank partition shall be wetted—not saturated. The Kanite shall be troweled to a smooth and even surface.

**Note:** If it is desired to apply over Kanite a conventional lime putty finish, colored plaster, etc., change the last sentence in the above paragraph to read

"The Kanite shall be brought to a level surface, but scratched in the usual manner to receive the finish coat."

and follow with the standard specification for the finish selected.

## with VELACHROME

**Note:** Velachrome is the trade mark of this Corporation as applied to a calcium caseinate product, of paint-like character especially developed for use with Gypsteel Plank. It is shipped dry, in 25 or 50 pound bags, and is prepared for application by mixing on the job with water. It is sold either in the natural color, which may be tinted on the job, or in a choice of eight factory mixed fast colors.

All Gypsteel Plank partitions (and furring) where indicated, shall be decorated with Velachrome as manufactured by Structural Gypsum Corporation, applied as follows:

Velachrome shall be mixed in a clean, galvanized pail. Mix in either warm (preferably) or cold water, stirring thoroughly and vigorously until the desired consistency is reached. Let stand for about half hour before using. If additional water or Velachrome is then added, the mixture shall be allowed to stand an additional short period. If the mixture is not to be used for several hours, lay a wet cloth on the surface. All Velachrome shall be used within two days after being mixed.

First tool all joints, and carefully fill to an even surface all major spalls and indentations with a mixture of 88 pounds of gauging plaster and 12 pounds of finishing hydrated lime, brought to a stiff consistency with water. Allow to dry.

Go over the entire surface, including joints, with a 1:1 shellac-alcohol size to obtain a surface of uniform

suction. As soon as the shellac size has dried, the surface is ready for the application of Velachrome.

For a fine stipple or textured finish use the following:

Apply with a brush, a rather heavy coat of Velachrome, brushing well into the joints but keeping paneled effect by not filling joints flush. Smooth with a triangle. After the first coat is thoroughly dry, follow with a thin coat of Velachrome and stipple or texture.

For a heavy stipple or textured finish use the following:

Apply with a brush, a thin coat of Velachrome, brushing well into the joints but keeping paneled effect by not filling joints flush. Smooth with a triangle. After the first coat is thoroughly dry, follow with a heavy coat of Velachrome and stipple or texture.

### NOTES

◆ If sized surface lacks "teeth", brush over it a thin wash of Velachrome.

◆ Be sure Plank joints and each prior coat is dry before following with another application.

◆ Use denatured alcohol with shellac.

◆ White shellac for size is to be preferred.



# SPECIFICATIONS For Gypsteel Ceiling Plank

All ceilings shall be constructed of Gypsteel Ceiling Plank, as manufactured by the Structural Gypsum Corporation. This Plank shall consist of factory moulded units, 2" thick by 12" wide by 6'-0" long, with sides and ends having ship-lapped gypsum joints.

Plank shall be reinforced longitudinally with two steel channels, one inch deep. All units shall contain three steel dowels, cast in the Plank, and running across the full width. Adjacent to one side, and continuous for its entire length, exposed in an offset in, but not projecting above the top surface of the Plank, shall be a band of copper-bearing, galvanized steel, with holes 1" on centers. The necessary number of Plank for starting rows, shall be provided with the steel band along both top edges.



GYPSTEEL  
Ceiling  
Plank

Plank shall be supported direct from the structural frame by means of approved, galvanized steel rod hangers firmly secured to both the steel beams, purlins, or joists, and the steel band in the Plank. Plank shall be placed with ship-lapped "tongues" overlaying "lips" of Plank in parallel ad-

jacent rows. End joints need not come under supports, but shall be broken with the maximum practicable distance between them. As each unit is secured in place, the steel dowels shall be driven through (by means of a dowel punch available from the manufacturer) and into the next abutting Plank.

**Note:** *This specification is recommended for ceilings on spans up to 6'-0". Best results are obtained when the ceiling is erected tight against the underside of the structural supports. Under no circumstance should the Plank be suspended more than a nominal distance below.*

## INSERT IN PLASTERING SPECIFICATIONS.

All ceilings shall be formed of Gypsteel Ceiling Plank.

Plaster shall consist of gypsum cement mortar mixed in the proportions of one (1) part of Gypsteel Neat Plaster to not more than two-and-one-half ( $2\frac{1}{2}$ ) parts clean, sharp sand, by weight. Where necessary, the Plank ceiling shall be sprinkled slightly with water to reduce suction.

A scratch coat is unnecessary on Ceiling Plank. The brown coat may be applied directly to the slabs, of sufficient thickness to take up any slight irregularities, but not less than  $\frac{1}{2}$ " thickness at any point. Brown coat shall be laid on with sufficient pressure to force well into all joints and fill same solidly.

Bring brown coat to a straight and even surface to receive finishing coat. Darby lightly and use water sparingly.

*No lime shall be used in first coat.*

After brown coat has set, any type of finishing coat may be applied, including gypsum finish, lime putty finish gauged with Gypsteel Gauging Plaster, sand float finish, Keene's Cement finish, etc.



# Properties of GYPSTEEL GYPSUM PLANK

Gypsteel Senior Plank  
10'-0" long  
Steel tongued and grooved binding on sides and ends.  
Reinforced with mesh.  
Weight, 11 lbs. per sq. ft.



Gypsteel Junior Plank  
6'-0" long  
Steel tongued and grooved binding on sides. Gypsum ship lapped ends.  
Reinforced with mesh.  
Weight, 11 lbs. per sq. ft.



Gypsteel Acoustical Plank  
10'-0" long  
Steel tongued and grooved binding on sides and ends.  
Reinforced with mesh.  
Weight, 9 lbs. per sq. ft.

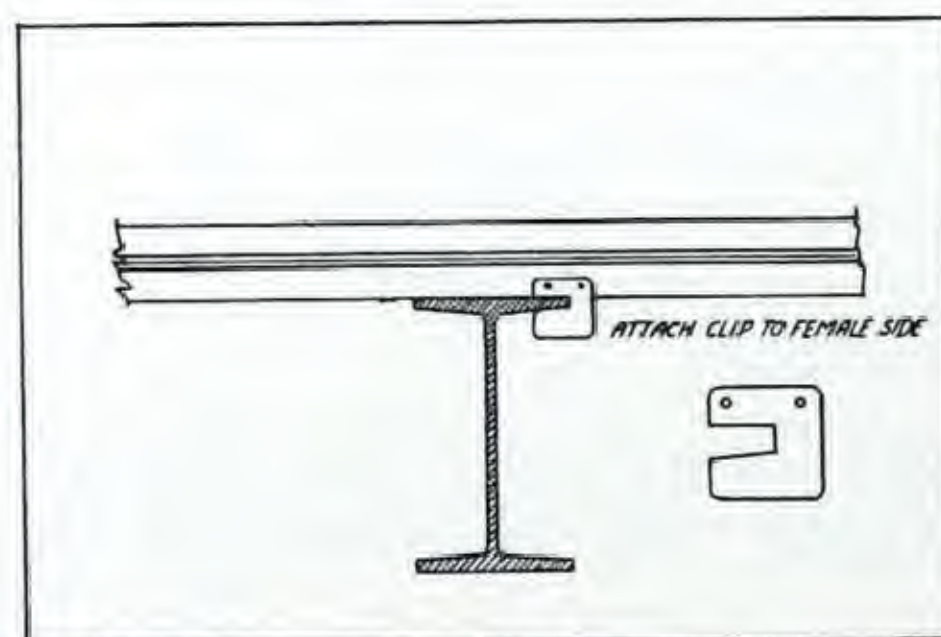


ALL SIZES 15" WIDE BY 2" THICK

LOAD TABLE  
TOTAL SAFE LOAD IN LBS. PER SQ. FOOT

Senior Plank				Junior Plank			Acoustical Plank		
4'-0"	5'-0"	6'-0"	7'-0"	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"
150	150	105	*75	150	120	*75	*75	*75	*75

Prices for Gypsteel Senior, Junior, and Acoustical Plank include clips for fastening to supports. Make no allowance for "tongue" in determining quantity of Plank required.



Typical Method of fastening Gypsteel Plank to supports

For floors, flat roofs and roofs with a pitch less than 3" in 12", specify Type 20 clips.

For roofs having a pitch of 3" in 12", or more, specify Type 16 clips.

Attach clips with 4d slaters nails.

Structural Gypsum Corporation does not contract for the installation of its products. It will, however, obtain for its customers and prospective customers, proposals for installing all Gypsteel structural products by certified erectors. Gypsteel Plank is also sold direct to consumer on a square foot basis.

\*For Roofs only.



# Properties of GYPSTEEL GYPSUM PLANK

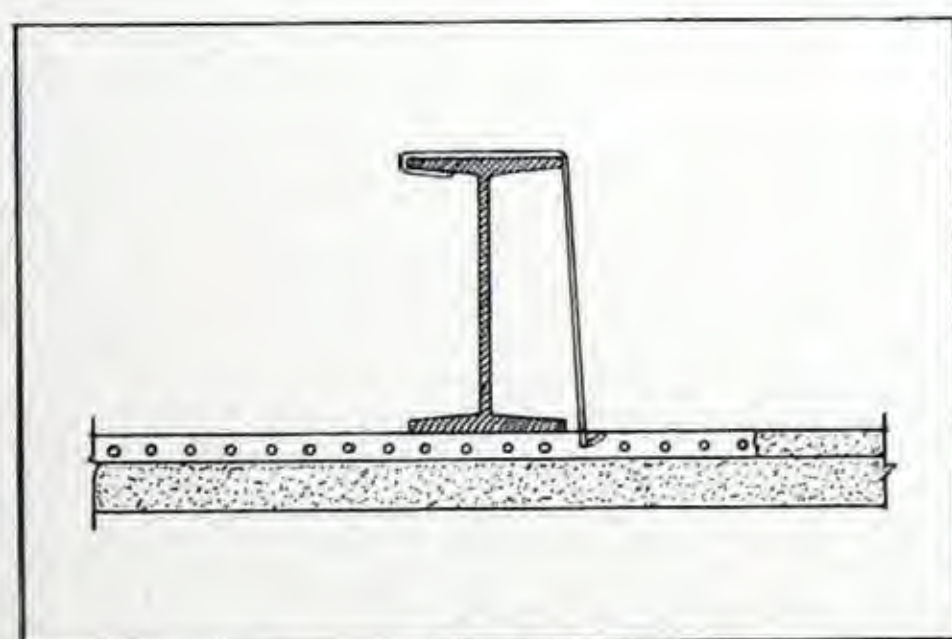


Gypsteel Ceiling Plank  
12" wide, 6'-0" long, 2" thick  
Gypsum ship lapped sides and ends.  
Steel doweled. Reinforced with channels.  
Weight, 11 lbs. per sq. ft.



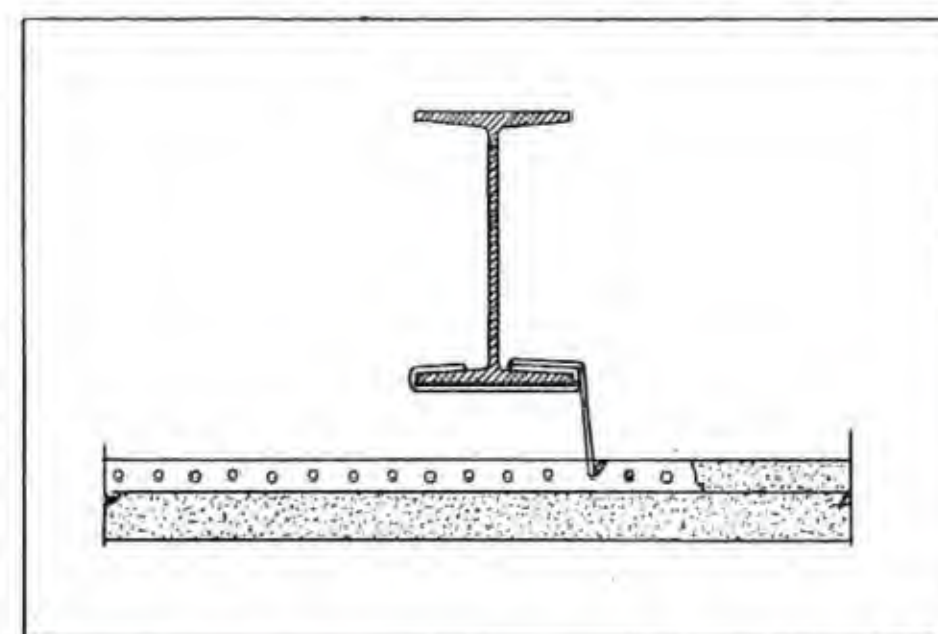
Gypsteel Partition Plank  
15" wide, 2" thick  
Manufactured to order in lengths  
up to 9'-0"  
Gypsum tongued and grooved sides,  
square ends. Steel doweled.  
Reinforced with channels.  
Weight, 11 lbs. per sq. ft.

Prices for Ceiling Plank include standard wire hangers for suspending not over 6" below the bottom flanges of beams. Make no allowance for "tongue" in determining quantity of Plank required.

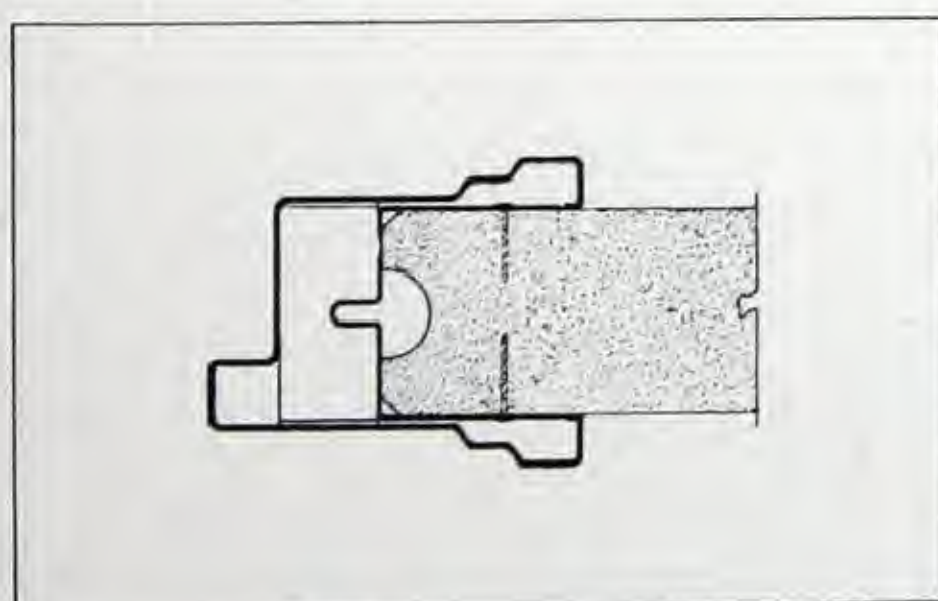


Ceiling erected before floor is laid

Typical construction of  
Gypsteel Ceiling  
Plank

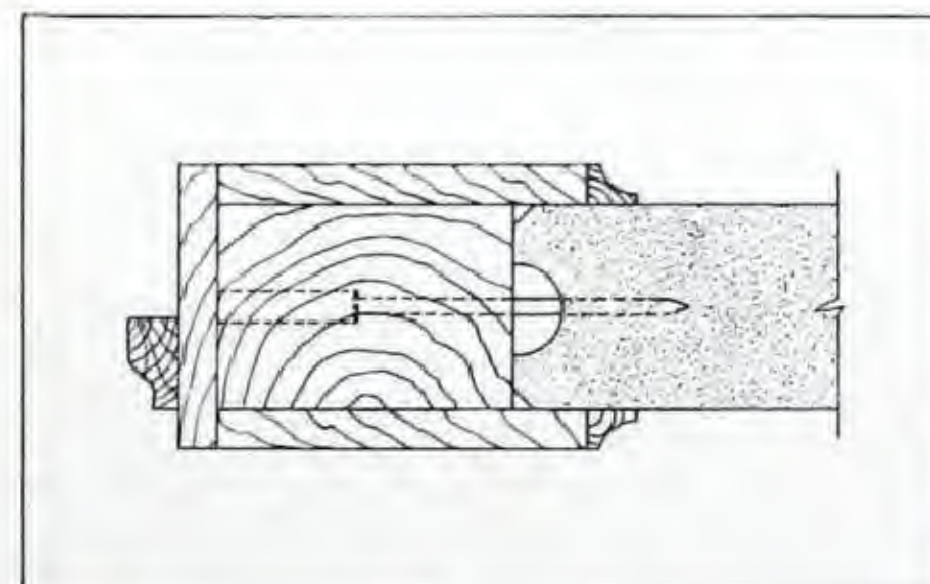


Ceiling erected after floor is laid



Metal door buck

Typical construction of  
Gypsteel Partition Plank  
at door bucks



Wood door buck



---

---

# STRUCTURAL GYPSUM CORPORATION

## Its Products and its Services



The products of The Structural Gypsum Corporation, including pre-cast slabs and Plank for floors and roofs, partition tile, and plaster are identified and marketed by the registered trade mark "Gypsteel." Their use is approved by the building departments of principal cities.

**Gypsteel Gypsum Plank.** As explained fully in this booklet.

**Gypsteel Pre-Cast Roofs** of several types to meet varying requirements. For application over steel frames in all types of commercial and industrial buildings, schools, hospitals, armories, etc.

**Gypsteel Pre-Cast Composite Floor Arch.** A fire-proof floor system fully approved for first class constructions by the building departments of principal cities. Installed over beams spaced up to 8-foot centers.

**Gypsteel Gypsum Partition Tile.** Available in all regulation sizes and excelling the recognized standards of strength by two and a half times.

**Gypsteel Gypsum Plasters.** A full line of Gypsteel gypsum plasters, including colored, each manufactured under the patented Gypsteel process.

**Velachrome.** A calcium caseinate plastic paint of superior quality for a highly decorative and wear-resistant finish.

**Zenitherm.** A factory pressed, decorative wall and floor material in 21 colors and mottled texture resembling the finest of building stones. Nailed or bedded in place by carpenters over wood or masonry. Resilient, colorful, quiet, decorative.

**Our Factory** in Linden, N. J., is so located as to serve economically all of the New England, Middle Atlantic, Middle Western and South Eastern States. Of modern design and large capacity, it combines the economies of mass production with a precision of mechanical and chemical control that secures uniformity of quality.

**Our Engineering Department** is composed of engineers of long experience in steel design and in structural steel shop practice. This department is well qualified to offer suggestions and assistance in the design of steel work which will assure maximum economies in the use of Gypsteel products.

**Our Service Department** likewise consists of men having many years' experience in the installation of Gypsteel Roof and Floor Construction, who are eager as well as competent to assist builders in solving unusual problems and in obtaining the lowest cost in installing these products.

**Installation.** Structural Gypsum Corporation does not contract for the installation of its products. It will, however, obtain for its customers and prospective customers proposals for installing all Gypsteel structural products through its certified erectors.



[BLANK PAGE]



CCA



[BLANK PAGE]



CCA